Detroit's water-filter plant will be one of the points of interest
for the nation's public-works officials when they meet in that city this month
at the Annual Congress of the American Public Works Association

Stage construction of streets

—a sound, economical practice with Texaco Asphalt products

Periodic surface-treatments with Texaco Cutback Asphalt build up a tough, waterproof mat on gravel or macadam streets, which is adequate for light traffic.

Eventually, when traffic becomes heavy, the street in the upper photo provides a satisfactory base for a durable Texaco Asphaltic Concrete surface.

As its name indicates, stage construction calls for the gradual building up of a street pavement over a period of years, as required by increasing traffic. In addition to serving as a wearing surface for a time, each improvement becomes part of the final pavement. The cost is thus distributed over many years.

Texaco Cutback Asphalts and Asphalt Cements are ideally adapted to use in the stage construction of streets. At first, the street may receive a gravel or macadam surface, well-drained and of adequate thickness, which is surface-treated with Texaco Cutback Asphalt to make it dustless and waterproof. At intervals of one to three years, additional surface-treatments of Cutback Asphalt are applied, building up a tough, serviceable mat.

Eventually, when increasing traffic calls for a more substantial pavement, a durable Texaco Asphaltic Concrete surface, capable of absorbing years of hard wear with low upkeep, is constructed in one or two courses. The existing pavement is not disturbed, providing an excellent base for the new plant-mixed asphalt wearing surface.

Use of the stage construction method in improving their streets assures the city and its taxpayers of a maximum return for their paving dollars.

Helpful information for municipal officials on the variety of types of Asphalt construction suitable for city streets can be obtained without charge or obligation by writing our nearest office.

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TEXACO ASPHALT

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VOL. LXVI SEPTEMBER
No. 9 1951

The American City

Issued Monthly by the
American City Magazine Corporation
470 Fourth Ave., New York 16, N. Y.
Tel. MU-5-9222

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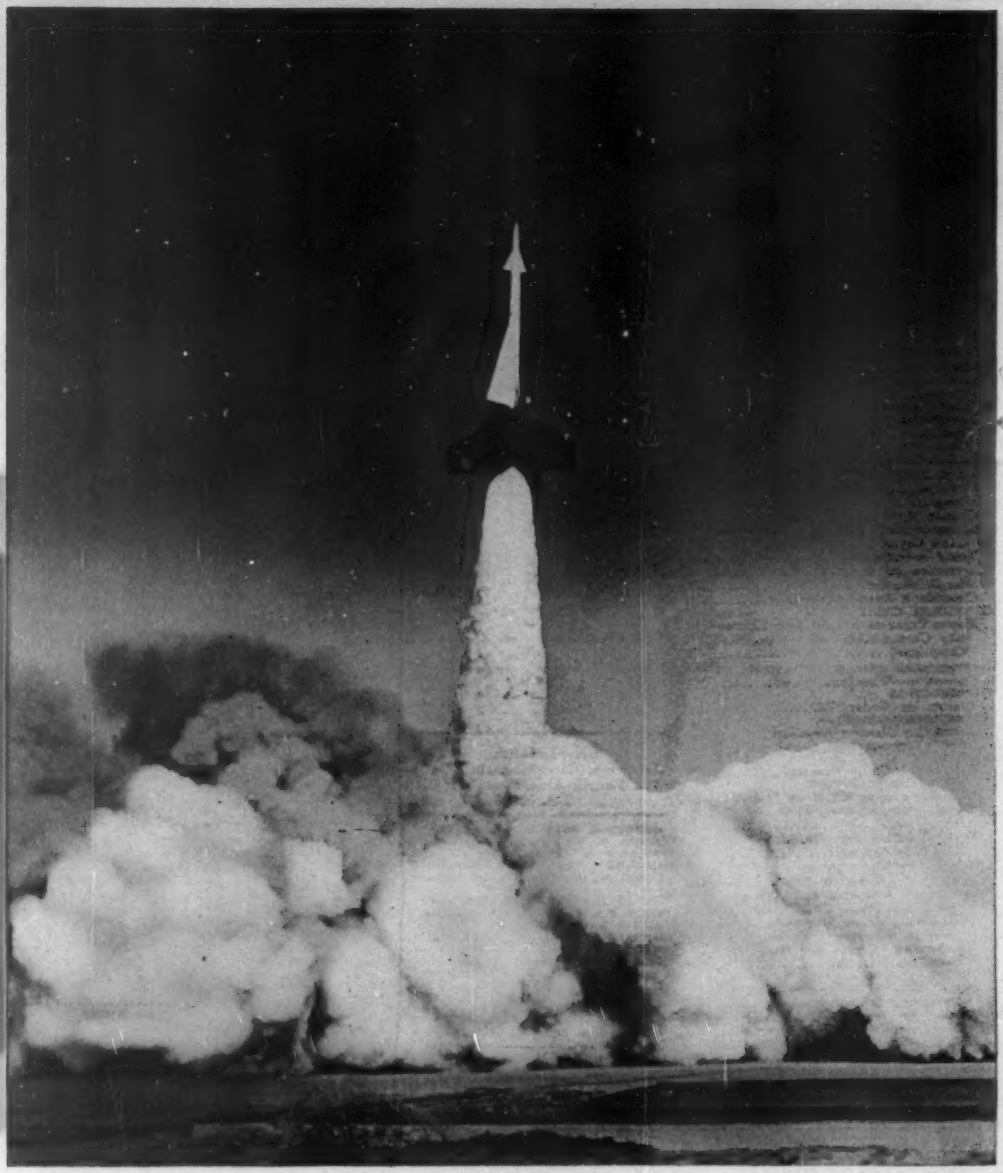
Subscription $4 per annum in any part of the world. Single Copies, 50c. Back Copies, $1.00. Entered as second-class matter, July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A.

The American City is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature

THE MUNICIPAL INDEX and ATLAS (issued annually—over 800 pages), when used with the current advertisements in THE AMERICAN CITY Magazine, enables officials to obtain the latest information and prices on all types of equipment and supplies of manufacturers seeking municipal business. THE MUNICIPAL INDEX is published by the American City Magazine Corp., 470 Fourth Ave., New York 16, N. Y.

Index to Advertisers, p. 242 • Coming Conventions, p. 161 • Copies of this issue printed, 23,000



New Guided Missile Takes Off....This newest anti-aircraft missile, soaring upward on its supersonic flight, is launched, steered and exploded by electronic control. These powerful missiles blast high-flying enemy aircraft out of the sky. The control devices were developed by the Bell System's research and manufacturing units—the Bell Telephone Laboratories and Western Electric Company—working together in traditionally close relationship. This guided missile assignment for the Army Ordnance Corps is just one of many important military projects now entrusted to the **Bell Telephone System.**

Our Municipal Notebook

Preparing for U. N. Day (October 24)
And U. N. Week (October 21-27)

MUNICIPAL OFFICIALS and civic organizations wishing to aid the vital cause of world friendliness, may obtain helpful ideas for local celebrations of U. N. Day and Week from the National Citizens' Committee for United Nations Day (816 21st St., NW., Washington 6, D. C.) and from the American Association for the United Nations (45 East 65th St., New York 21, N. Y.).

This month many mayors will be framing proclamations that urge their citizens to join in these world-wide observances. An excellent model, in THE AMERICAN CITY's opinion, is the proclamation issued a year ago by the Mayor of Warwick, R. I., and reprinted on this page.

It has been suggested, also, that this year communities be encouraged to include in their observance some appropriate commemoration for the soldiers of the United States and other members of the United Nations' forces who have held the line against aggression in Korea. As this idea has been endorsed by veterans groups, mayors may wish to include it in their proclamations.

CITY OF WARWICK
Executive Department
Warwick, R. I.

WHEREAS, October 24, 1950, the fifth anniversary of the creation of the United Nations as an instrument of the peoples of the world to bring an end to acts of aggression and to promote the welfare of all men, has been designated by the General Assembly of the United Nations as United Nations Day, and

WHEREAS, on this day those of many languages, cultures, religions and races throughout the world will unite in a day of rededication to the sacred principles of the United Nations, and

WHEREAS, in these days of uncertainty and crisis we turn with hope and faith to the United Nations as the organization through which all peace-loving nations may express their determination that no further acts of armed aggression shall pass unchallenged.

NOW, THEREFORE, I, Joseph Mills, Mayor of Warwick, Rhode Island, do hereby urge that all residents of our city join in this world-wide observance. The United Nations was not conceived merely as an organization of diplomats; it belongs to the people and from their understanding and support it derives its strength. This is an appropriate time for each member of our community to fulfill his obligations as a citizen in these troubled times by learning of its organization and purpose. Historic decisions are being made in accordance with its charter. In these decisions the future of our country is inseparably linked with that of the United Nations. Only as we realize fully the great contribution it is making to the welfare of the world in the advancement of health, education, labor, human rights, and allied fields, as well as in containing actual acts of aggression, will the full weight of our faith and enthusiasm give strength to these decisions. Only then will the goal of the United Nations as stated in its Charter — "to practice tolerance and live together in peace with one another as good neighbors" — become a reality.

JOSEPH MILLS, *Mayor*

This 1950 proclamation by the Mayor of Warwick, R. I., may offer suggestions for 1951 proclamations in other cities.

Local Revenues Up 92% from 1942

TOTAL REVENUE of local governments in the United States amounted to $13,500,000,000 in 1950, up 9% from 1949 or 92% from 1942. About $600,000,000 of the 1949-50 increase of $1,100,000,000 was contributed by local tax yields. Aid received from other governments was up nearly $400,000,000, or 10%. The remainder was derived from charges and miscellaneous revenue, which rose 9%. For the eight-year interval, 1942-50, local tax yields rose 73% as compared with increases of 132% and 125% in local revenues from fiscal aid and from other non-tax sources, respectively.

General revenue of all governments in the United States in the 1950 fiscal year totaled $57,600,000,000, or $379 per capita. Taxes provided $54,600,000,000, or $360 per capita. The remaining $2,900,000,000 represented charges for governmental services and other non-tax revenue. The Federal Government received almost seven tenths of all taxes, $37,700,000,000, as against the $16,900,000,000 of state and local tax revenue.

These figures are from "Governmental Revenue in 1950," a report released

(*Continued on page 7*)

The American City Quiz

Match Wits with the Experts

QUESTIONS

1. *What type of insecticides prove most effective in eliminating flies and other insect pests?*
2. *How much water per family is used in multi-family dwellings?*
3. *Is the use of water directly proportional to the growth in population?*
4. *Should food-waste grinders be required in commercial food-handling establishments?*
5. *What sort of snow-removal equipment will be well suited to the small community?*
6. *Are there any radio-equipped dog-pound trucks?*
7. *Should firemen have any duties other than those of actual fire fighting?*
8. *When is the proper time to test fire hydrants?*
9. *What would be a fair charge for refuse collection on a utility basis?*
10. *What sort of sewage treatment is suitable for a city that must receive and treat wastes from an apple or fruit industry?*

(Answers on page 9)

Chicago picks SUPER SIRENS

. . . for complete air-raid prote[illegible]T costs!

-and only HOR builds *Super Sirens** for LARGE AREA COVERAGE

Official C.D. bulletin recommends large super-sirens for basic coverage.

and a complete line of *vertical Sirens* for "FILL-IN" COVERAGE

In order to overcome high-level noises in certain areas, C.D. officials recommend use of supplementary low power units to assure adequate coverage.

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H. O. R. SUPER SIREN is rotatable and provides maximum coverage,—at lowest cost. Built in 15 and 40 HP sizes.

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August 1951 by the Bureau of the Census. The statistics cover "general revenue"—i.e., revenue, including all taxes, received in the exercise of general-government functions, as distinguished from the management of enterprises and the administration of trust and sinking funds. Hence the gross receipts of water, electric, gas supply, and other government-owned enterprises are excluded, and only any net amounts provided for governmental purposes by such enterprises are included with general revenue.

Property taxes continue to constitute the largest single class of state-and-local revenue, yielding $7,400,000,000, or $49 per capita, in 1950. Of this sum, about $300,000,000 represented state property-tax collections, the remainder being local revenue. Sales and gross-receipts taxes—primarily state rather than local levies—ranked next as a source of state-and-local revenue, providing $5,200,000,000 in 1950. All other taxes of state and local governments yielded $4,400,000,000 (including unemployment-insurance tax collections of $1,000,000,000); federal aid provided $2,100,000,000, and other non-tax sources $2,300,000,000.

Fiscal aid—almost all from the states (including federal aid channeled through state governments)—comprised 31% of local-government revenue in 1950, counties and school districts being particularly so benefited. Property taxes in 1950 contributed about nine-tenths of all tax revenue, or more than half of all general revenue, of local governments.

Rhode Island Grants Cities Home Rule

RHODE ISLAND municipalities are the latest in a growing list of American cities to have the authority necessary to deal effectively with the numerous and complex problems that confront them.

As a result of a recently approved home rule constitutional amendment, all Rhode Island cities and towns now have the right if self-government in all local matters, the American Municipal Association reports. The home-rule amendment was one of six that was okayed by Rhode Island voters late in June. Another amendment specifically applicable to cities gave them authority to acquire property for the establishment of off-street parking facilities, if the legislature approves.

Self-government for Rhode Island cities has been an issue between the communities and the state legislature for years. Under the old constitution the cities had to go to the legislature for permission to perform many purely local functions. In recent years the legislature has refused to approve charters which individual cities had already ratified by a substantial majority of the local electors.

Transit Costs and Prices

LABOR in the transit industry has obtained tremendous advances in rates of pay and working conditions in the recent past. But the riders and regulatory officials must understand that these costs must be paid for. — COL. S. H. BINGHAM.

Why should such a statement be felt necessary? How can anyone doubt that the cost of a product must be paid by someone? The answer is, in part, that few of the general public have the business acumen to recognize the basic tie-up between cost and price.

Local transportation, it is agreed, should be frequent, fast, comfortable, and cheap. But what is meant by cheap? Ten cents? At most 15 cents? Why should not an even higher fare be charged if that is what efficient management needs in order to provide frequent, fast, comfortable transit in a "rising economy"? And why should not the cost be paid by the rider, instead of partly by the taxpayer?

Whatever your answer, it is going to mean that if a privately owned public utility cannot pay high prices, wages, and taxes out of a 10- or 15- cent fare, then the public, either as rider or taxpayer, must pay the difference. This usually means public ownership, with the property in charge of appointives who may have less managerial ability than the executives they replace.

Colonel Bingham recognizes this impasse and proposes a "corporation" instead of a department. In a situation where innocent bystanders must make possible the maintenance of a low price in the face of rising costs and decreasing demand, their only safeguard is competence of management. As transit increasingly becomes *public* transit, conscious action should be taken in the interest of the public to inject and retain both private initiative and a spirit of public service in the new management. By their annual statements you shall know them.

(*See "Hope for Public Transit" on page* 155.)

Municipal Expenditures In the Defense Program

To the Editor of THE AMERICAN CITY:

Your readers may be interested to know that, on June 4, 1951, the Chicago Plan Commission addressed to the Mayor and City Council of Chicago a letter which anticipated some of the ideas expressed

(*Continued on page* 9)

Mayors Urged to Support Joint Community Chest And United Defense Fund Campaigns

A POSSIBLE AID to the growing number of mayors who will be urging their fellow citizens to support next month's annual "Red Feather" campaigns is offered by the United Defense Fund in the accompanying suggested mayors' proclamation.

Last year more than 50 community chests adopted a broader form of federation than heretofore, combining local and national appeals into one united campaign. With the subsequent organization of United Defense Fund, Inc., this movement is expected to spread to many more cities this fall.

Mayors or other city officials wishing to aid in this patriotic movement will find helpful information on page 5 of both the September 1950 and February 1951 issues of THE AMERICAN CITY. Publicity material is available from your local Community Chest, or from Community Chests of America and United Defense Fund, 8 West 40th Street, New York 18, N. Y.

OFFICE OF THE MAYOR

I am glad to commend our annual Community Chest campaign and declare October Red Feather month in (our city).

Under the symbol of the Red Feather, (number) of our local voluntary health, recreation, and welfare services unite their appeals for funds in one campaign. Newly included this year are U.S.O., United Civilian Defense Services, and American Relief for Korea—member agencies of the emergency-created United Defense Fund, Inc.

The continuance of these Red Feather services for our neighbors and our boys away from home depends on the effort and generosity of every one of us. As I make my contribution, I am happy to invite my fellow citizens to give generous support to our community's united Red Feather campaign.

(Signed) ....., *Mayor*

Suggested Mayor's Proclamation in behalf of "Red Feather" month.

DOES A 50% SAVING IN MANPOWER AND OPERATING COSTS INTEREST YOU?

you can get it... with WAYNE CENTRAL DUMPING

Practical "central dumping," made possible with the fast, full-loading Wayne 450 Sweeper, is saving thousands of taxpayer dollars... keeping more miles of streets swept sparkling clean... paying dividends in equipment and labor saved. *Here are point-by-point reasons why:*

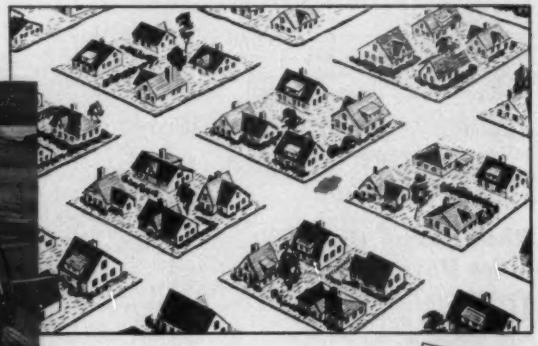
EFFECTIVE CAPACITY—The Wayne 450 is self-loading to its effective 3 cubic yard capacity without stopping, is built with full front axle to handle heavy loads at traffic speeds. *You save time, sweep longer!*

CUTS DUMPING COSTS—The Wayne travels at traffic speeds fully loaded either to the city dump or to your pre-arranged "central dumping" point, unloads in a jiffy and returns quickly to sweeping again. *More time saved, more work done!*

SAVES MANPOWER AND EQUIPMENT—At the central dumping point, one truck and crew, or truck and loader, can pick up the compact loads in a few minutes time at the end of the sweeping day. *You save on manpower and equipment!*

Central dumping with the Wayne 450 Sweeper is proving the answer to reduced sweeping costs in large and small cities everywhere. *Investigate the Wayne for your community today.*

Wayne Model 450 Pick-Up Sweeper



MORE THAN 200 CITIES are using WAYNE Sweepers for economical street sanitation. Outstanding Model 450 features include: Rear wheel steering for maneuverability... largest effective hopper capacity of any sweeper... low body design for full forward vision... forward 42" gutter broom ... full floating broom suspension. For details on a dozen other WAYNE features—write today.

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in your July editorial, "Is Local Government Getting a Square Deal?"

This letter expressed the hope that the City of Chicago would urge the federal authorities to exercise extreme care when restricting municipal expenditures for capital improvements.

"We fully agree," wrote the Commission's Acting Chairman, Frank C. Rathje, "that non-essential public expenditures should be cut from municipal, state, and federal budgets. Yet it must be pointed out that some municipal capital improvements may be entirely essential to the maintenance of a city because of added needs resulting from increased population, new industrial construction and other developments which may come as a result of the defense program. Among these needs in Chicago are capital improvements such as new schools, extensions to the sewerage system, new sewage disposal plants, new airports, new expressways, new water filtration plants, and other facilities, urgently required to maintain essential services to this area's growing population and industry.

"It is to be hoped that federal authorities will agree that maintenance of the physical plant of cities of the importance of Chicago is as essential to a sound defense of the nation as almost any other activity. In our opinion, fullest consideration to the necessities of each individual case should be given before any restrictions of municipal financing are made."

FREDERICK T. ASCHMAN
Executive Director
Chicago Plan Commission

International Union Discusses Water, Sewerage, Education

LOCAL WATER SUPPLY and Sewerage and The Local Authority and Education were the two principal subjects of discussion during the Tenth Congress of the International Union of Local Authorities held at Brighton, England, in late June. Two general reports were prepared which synthesized statements from fifteen member unions on these problems. Other important discussions were held on Food and Drink Infection and how local governments can cooperate in the work of the United Nations.

The Congress brought together over 335 municipal officials from 22 countries, including Israel, Thailand, The Sudan, Turkey, Yugoslavia and Australia, as well as Western European Nations. The Congress was a striking affirmation of the role of local government in democratic society and of the importance of preserving local autonomy to the greatest possible extent. At the same time, the universal need to rely on central governments for funds brought threats to that autonomy, of concern to municipal officials all over the world.

Dr. P. J. Oud of Rotterdam was re-elected president. Mayor Rebecchini of Rome and Mayor Ernest Reuter of West Berlin were added to eight members re-elected on the Executive Committee. The Union accepted the invitation of Vienna to hold its next Congress there in 1953.

Mayor David Lawrence of Pittsburgh, President, U. S. Conference of Mayors, accompanied by Executive Director Paul V. Betters, led an American delegation of five, including Mayor Oscar Holcombe of Houston; Mayor A. B. Chambers of Des Moines; Mayor Allen C. Thompson, of Jackson, Miss., and Mayor Dorothy Lee of Portland, Ore. Other Americans present were Herbert Emmerich, Chairman, U. S. Committee for International Municipal Cooperation; Don F. Herrick, Executive Director, American Public Works Association; Prof. Alonzo Grace, School of Education, New York University; Wesley Gilbertson, Public Health Service, Atlanta; and Charles S. Ascher, representative of the Union at the United Nations, New York. The Canadian delegation was led by Mayor P. H. Boivin, President, Canadian Federation of Mayors.

The American City Quiz

ANSWERS TO QUESTIONS ON PAGE 5

1. In Mexico, Mo., City Manager Peter F. Roan uses DDT, chlordane and aromatic petroleum at a rate of 25 gallons per hour out of a TIFA fogger. This disperses a dry fog whose particles measure ½ to 60 microns. Mexico is the first Missouri city to adopt fly-control work on a city-wide basis.

2. In a multi-family building in Weehawken, N. J., Edward Walasyk, of the Hackensack Water Company, discovered an average water use of 60 gallons per person per day, or 700 cubic feet per apartment per month. In Omaha, Nebr., John C. Detweiler, Manager of the Metropolitan Water District, found water use averaging 640 cubic feet per apartment per month in apartment houses ranging from 3½ to 6½ rooms, and 425 cubic feet per month in an apartment of 1 to 3 rooms.

3. No. Industrial use of water often far overbalances the domestic. S. T. Powell, Baltimore consulting engineer, discovered that although the population of Texas has increased 287% since 1890, in the same period its water use has grown 7,000%.

4. The City of Dearborn, Mich., feels that such a step is wise. In all new concerns, the grinders must be installed immediately. At older concerns, the city has given them one year to make the change. The regulation includes multiple-family residences of four families or more, as well as restaurants.

5. Ely, Minn., with a population of 6,000, has found a Minneapolis-Moline tractor handy for snow removal. The tractor is rubber-tired and equipped with a one-way blade. It opens all streets, windrowing the snow to the center. Then the blade is removed and a front-end loader is installed in its place. The same machine then picks up the snow and puts it in the truck. City Engineer W. M. Somero, reports that he can also equip the tractor with a power sweeper, crane hook, or bucket.

6. Richmond, Calif., has equipped its pound trucks with 3-way radio to keep them on the job and not make them return for orders. The trucks are equipped with Link Radio Corporation equipment. The men in the trucks also can report suspicious circumstances to police, according to City Manager Wayne E. Thompson.

7. Wayne Swanson, Fire Chief of Rockford, Ill., expects each man on his force to inspect a portion of his territory at least six hours per day. Serious violations go to the fire inspector.

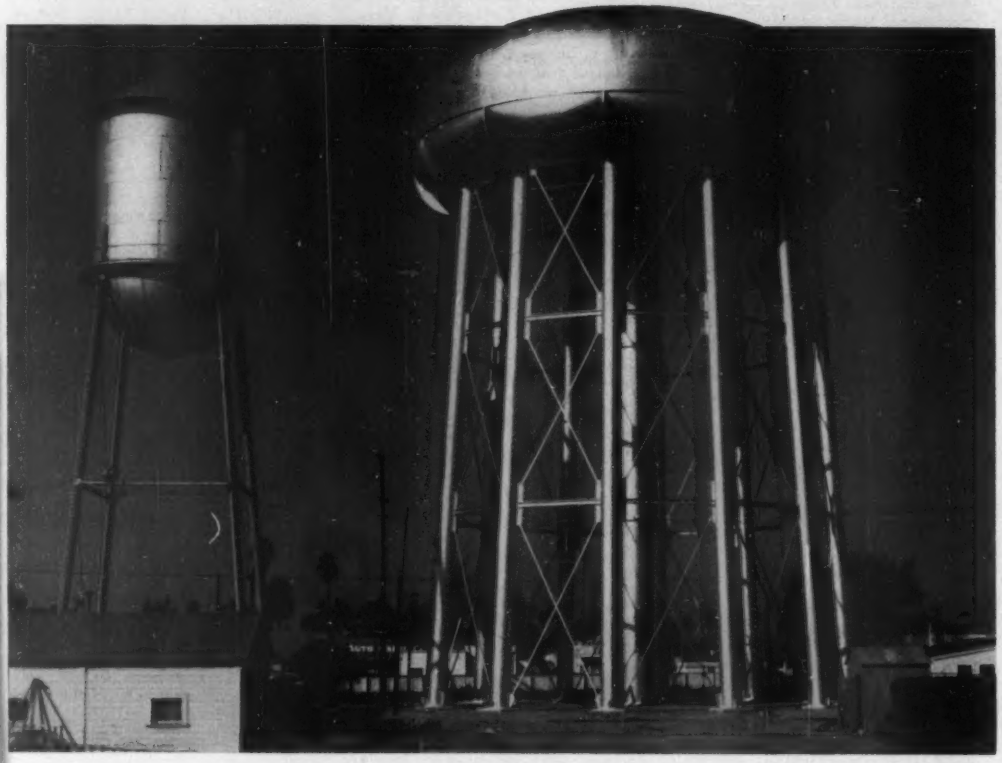
8. The best time is in the fall, according to H. W. Niemeyer, Superintendent of Distribution at the Indianapolis Water Company. Most fire hydrant difficulties arise in the spring and summer.

9. Tulsa successfully operates its refuse-disposal service by charging $3.00 per quarter per family. Charges to business, because of their varying character, are negotiated. The city services 35,000 single-family homes twice weekly, large apartments and business daily, uses 35 covered refuse trucks and the sanitary fill for disposal, using an Allis Chalmers tractor with an 8-foot Bull Clam bucket. Ralph Ingalls is Superintendent of Refuse Collection.

10. There are no generalized answers to any industrial-waste treatment problem. However, experience has shown the trickling filter to be very rugged and able to treat successfully sewages of widely varying character. Winchester, Va., with a healthy apple industry, uses two high-rate trickling filters with Dorr reaction distributors in its plant. The plant is designed so that the load on these filters will be two pounds of BOD per cubic yard of stone during the canning season, and one pound during the rest of the season.

Send in your suggested questions with the answers on municipal topics for use in this feature. The AMERICAN CITY will make a small payment for each question accepted.

CARRYING ON A TIME-TESTED TRADITION



SINCE 1913, Horton elevated storage has been daily providing Oxnard, California, with better, more dependable water service. A 150,000-gallon tank did the job until last year when, as a result of increased water consumption, a new 1,000,000-gallon radial-cone bottom tank was installed. This shining new structure will continue its faithful service for many years to come.

Here is time-tested proof of the effectiveness of Horton elevated storage in municipal water systems. It's a story that's repeated over and over again in hundreds of cities throughout the country. Such benefits as increased pressure, decreased pressure variations and lower pumping costs can't be overlooked by water works engineers.

Improve municipal or industrial water systems for years to come with Horton elevated water tanks. Capacities range from 15,000 to 500,000 gallons with ellipsoidal bottoms and 500,000 to 3,000,000 gallons with radial-cone bottoms. Write our nearest office today for more information and prices. There is no obligation on your part.

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Chicago 4	2127 McCormick Bldg.	Salt Lake City 4	501 West 17th South St.
Cleveland 15	2236 Guildhall Bldg.	San Francisco 4	1533—200 Bush St.
Detroit 26	1501 Lafayette Bldg.	Seattle 1	1301 Henry Bldg.
Havana	402 Abreu Bldg.	Tulsa 3	1625 Hunt Bldg.
Houston 2	2101 National Standard Bldg.	Washington 6, D. C.	1163 Cafritz Bldg.

Water Supply and Treatment

Filter Plants Not Needed In Salt Lake

Engineering study shows that controlled chlorination alone will provide all the purification required for 85% of the water received

LIKE "man bites dog," comes the news "Engineers recommend against filter plant." The plant that the engineers advised the client not to build would have cost a fat $3,000,000 along with extras, appurtenances, and a brass plaque over the door with the names of the designers.

The advice was given to the Metropolitan Water District of Salt Lake City in a report made by the Board of Engineers composed of John A. Carollo of Headman, Ferguson and Carollo, Phoenix, Ariz.; James Montgomery, of Pasadena, Calif., and N. T. Veatch of Black & Veatch, Kansas City, Mo. The field study was carried on by Black & Veatch over a period of 15 months in order to have available actual field operating data covering all seasons.

The study came about when the Metropolitan District arranged to use water for two divisions of the Provo River Project of the United States Bureau of Reclamation. One of these, the Deer Creek Division, has an annual yield of 100,000 acre-feet of water per annum. Of these, the District can use 46,500 acre-feet per annum. The second, the Aqueduct Division, has a capacity of 150 cubic feet per second and will have a covered reservoir, for use by the city, of 40,000,000 gallons capacity. It was this supply that the District determined to study in advance for its fitness for use.

Sanitation Program

Instead of filter plants, the report recommends that a program of sanitation be instituted on all watersheds that produce surface supplies. It also recommends that chlorination stations for treating the water from Deer Creek reservoir be built at the outlet of the reservoir and at the inlet to the proposed Terminal reservoir, and that an ammoniation station be constructed on the aqueduct.

The report further recommended that plankton control and chlorination on the Deer Creek supply be supervised by a sanitary chemist and operators on duty 24 hours per day. It recommended chlorination facilities at the Parley's Big Cottonwood and Little Cottonwood treatment plants be modernized and made fully automatic with operators on duty around the clock. It recommended that all distribution reservoirs be baffled, repaired where needed, and covered.

Only the City Creek supply, furnishing less than 15% of the total city water use, requires filtration. This creek flows through a canyon that is a favorite picnic area. It has a fine highway traversing the bottom of the canyon and leading to a large picnic area developed by the Salt Lake Rotary Club. Since control of pollution by picnickers is practically impossible, the report did recommend filtration. The plant recommended would have only a 7,000,000-gallon daily capacity and be operated at a rate of 3 gallons of water per square foot per minute through the filters.

Contrary to the opinion of many, engineering firms frequently recommend against substantial engineering projects where construction would have meant large engineering fees. One spectacular example occurred in Memphis, Tenn., during the days of PWA construction. At that time, Black & Veatch, who delivered the Salt Lake City report, gave their opinion that no activated-sludge plant was necessary, regardless of the great pressure for the construction of such a plant.

Standpipe Preferred at Harwich, Mass.

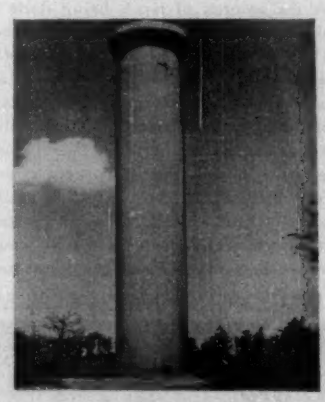
TO SUPPLY added storage under pressure, the Harwich (Mass.) Water Department recently erected a standpipe 147 feet to the overflow, 30 feet in diameter. The tank stores approximately 777,000 gallons. It is erected so that its overflow elevation is approximately the same as that of the town's 250,000-gallon elevated tank.

Harwich is primarily a summer-resort town, and has a wide variation in water use. The average daily demand during the winter is about 100,000 gallons, increasing to around 900,000 during July and August. Peak-day demand is usually around 1,150,000 gallons.

Unusual daily water-use peaks are experienced for several hours. These peaks are caused by the large amounts of water used on lawns—as the local soil is sandy, and lawns and gardens require considerable watering. The new standpipe will make it possible to maintain adequate reserves for fire protection as recommended by the New England Fire Insurance Rating Association, despite these peak water-use periods.

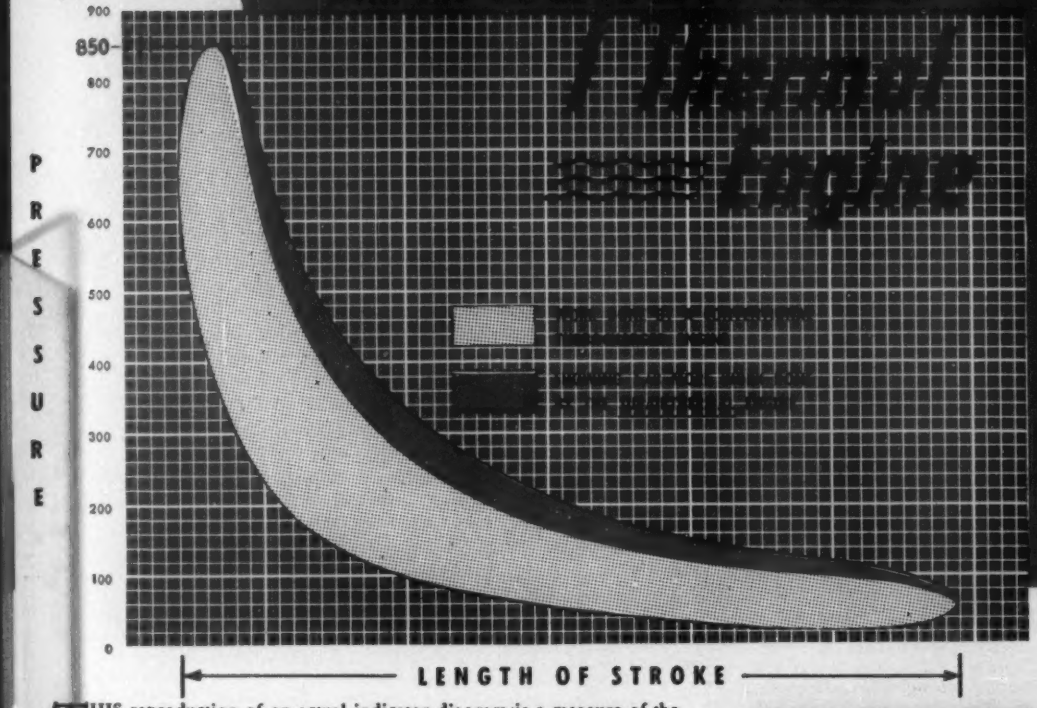
Harwich has four gravel-packed wells, connected to a common suction main. The pumping units consist of a 500-gpm Pennsylvania centrifugal pump connected to a Fairbanks-Morse 32E12 diesel, and a 1,000-gpm Pennsylvania centrifugal pump connected to a buda gasoline engine. The town Water Department serves about 1,400 accounts, and has 30 miles of mains and 175 hydrants.

The new standpipe was designed by Whitman and Howard, of Boston, Mass., and the tank was erected by the Hammond Iron Works, of Warren, Pa. The General Painting and Maintenance Company, of Boston, Mass., took care of the painting. The foundations and connecting piping were completed by the Gallo Construction Company, of Sagamore, Mass. The Water Department operates under the direction of John W. Hughes, Superintendent.



Here it is...

ONE-THIRD MORE POWER



THIS reproduction of an actual indicator diagram is a measure of the average pressures within the cylinders of the *SUPAIRTHERMAL* Engine* and a conventional turbocharged engine. The darker area shows the amount of work being done by each piston in the conventional engine. The *solid red* area shows the *increase in the amount of work* done by each piston in the Nordberg *SUPAIRTHERMAL* Engine—*resulting in an increase of one-third in horsepower without increasing the maximum combustion pressure or the internal temperatures.*

Here, then, is actual proof that the Nordberg *SUPAIRTHERMAL* Engine *is* the outstanding engine of the Diesel field . . . delivering one-third more horsepower in the same space as a conventional turbocharged engine.

The *SUPAIRTHERMAL* Engine is available in a full range of 4-cycle types for fuel oil, Duafuel, or spark ignition gas operation, in sizes from 425 to 3200 B.H.P. Write for further information on the *SUPAIRTHERMAL* Engine, outlining your power requirements. *(Patents Pending).

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DIESEL ENGINES

Street Construction & Maintenance

Rubber Roads No Longer Experimental in England

APPARENTLY, in the minds of certain British engineers, the use of rubber in asphalt surfacing has emerged from the experimental stage, and is now an operating actuality. This year approximately 22,000 square yards of highway surfacing will be placed in a single project using the rubber admixture. This was reported in the British *Municipal Journal*, No. 3048, Vol. 59.

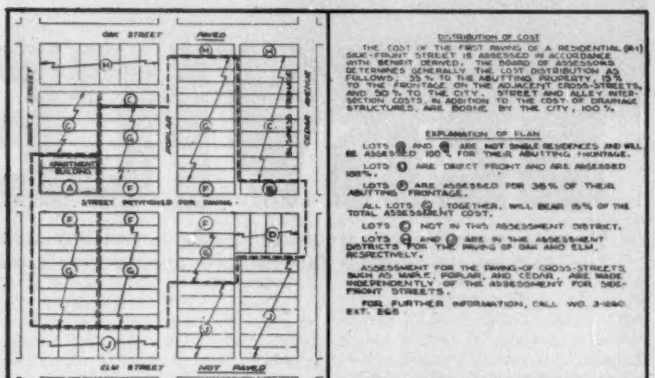
The highway is the Leeds-Wetherby road. The decision to mix rubber with the asphalt resulted from a test conducted last year under heavy traffic conditions. In this experimental stretch, one side was laid with bitumen-rubber solution and coated with rock chips; the other was surfaced without the rubber. The bitumen-rubber mix showed that it remained "tacky," and held the stone, while the other turned dry and brittle, allowing the stone to be pried away without the possibility of its being restored by traffic action.

Viscosity of rubber-bitumen increases over ordinary bitumen as the temperature rises, according to the British Rubber Development Board. While viscosities are the same at 25°C., they are 15% higher at 30°C., 17.7% higher at 35° C., 25% higher at 40° C., and 45% higher at 45° C. The rubber-bitumen is apparently unaffected by high or low atmospheric temperature such as would be expected in normal paving operations.

At Leeds, the material used is a 60/70 penetration bitumen to which rubber powder has been added. The mixture was heated with a constant agitation for approximately three hours at a temperature of 300°F. after which a light creosote oil was added.

The roadway is being built by the inverted penetration method. The rubber-bitumen was delivered in standard spray-bar distributors at a viscosity of 300/320 seconds (Standard Tar Viscometer) and applied at a temperature of 280-300°F. It was applied at the rate of 5/6 square yards per gallon. On this rock chips were placed at approximately 70/80 square yards per ton.

How Detroit Finances Street Paving



THE abutting-property owner does *not* pay all—when Detroit paves its residential streets. The city assumes a maximum of 25% of the cost in recognition of the over-all benefit that the paving brings to the entire municipality.

When a property is a "side frontage" in a residential district, that is, lots in a corner location whose greater length abuts the streets to be paved, owners pay 35% of the paving cost. Of the remainder, 50% will be paid by the city and 15% by all lots that are situated within a half block of the street.

Assessments are payable in four annual installments, with interest at 6% of the deferred payments.

The order of construction depends on the interest of the benefited property owners. Those streets with 50% of the lots occupied receive preference when a majority of the benefited property owners petition for paving. Property owners who accompany their petition with 25% down payment receive further preference.

More Municipal Improvements Get Federal Planning Aid

FOUR water improvements, sewerage projects, one street improvement, and one project involving a municipal passenger elevator to an observation tower, are among local public-works projects that have been approved for planning advances by the Federal Housing and Home Finance Agency, Community Facilities Service, Washington, D. C.

The passenger elevator, with a 110-foot lift, will link the business and residential levels of Oregon City, Ore. Another advance will assist Grovetown, Ga., in plans for a new water-works system. Grovetown is east of Ellentown, S. C., which is to be razed as the site for the H-bomb plant under construction.

The additional projects include the following:

Anoted, W. Va.: Sewage-treatment plant and sewer lines
Chisholm, Minn.: Sewage-treatment plant and sewer system
Hominy, Okla.: Sewage-treatment plant
Jackson, Ohio: Sewage-treatment plant and new sewer lines
Lenox, Iowa: Sewer extensions
Lincoln, Ill.: Sewer-system improvements
Loudonville, Ohio: Sewage-treatment and sewer extensions
Nutter Fort, W. Va.: Street improvements
Oceanside, Calif.: Water-distribution improvements
Pangborn, Ark.: Sewerage facilities, including treatment plant; also water-supply and distribution facilities
Pittsburg, Calif.: Water-treatment plant, reservoir, and pipeline
Sheridan, Ore.: Sewage-treatment plant and sewer extensions
Winnebago, Minn.: Sewage-treatment plant.

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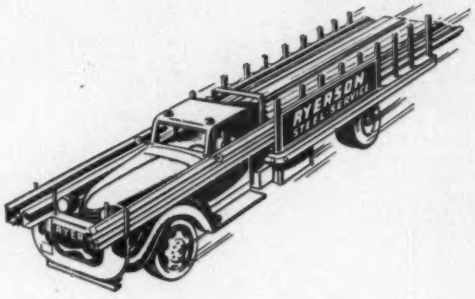

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200-Ton Outfall Chamber Placed

Nassau County's new outfall chamber is lowered into position in the channel.

A 200-TON reinforced-concrete box the height of a three-story building was lowered into place to serve as the outfall chamber for Nassau County's new sewage-treatment works at Bay Park, N. Y.

The new Nassau County sewage-treatment works, now under construction, will serve a 41,000-acre area, with a present estimated population of 300,000. When it goes into operation late this year, the treated effluent will flow into the outfall chamber through a 12,600-foot line of 84-inch reinforced-concrete pipe now being constructed by Merritt-Chapman and Scott. The heavy concrete box, with effluent escape openings midway up each side, is designed to keep the pipe line outlet from being clogged or otherwise damaged.

Built by Merritt-Chapman and Scott on a barge near the site, the chamber is 29 feet high, 15 feet long, and 13½ feet wide. A joint of 84-inch pipe is built into its base to serve as a connection with the line leading from the plant. Except for the effluent-escape openings and a manhole inspection entrance at the top, all of its walls are of solid reinforced concrete approximately 2 feet thick.

The new Bay Park plant will be a treatment facility of Nassau County's Sewage Disposal District No. 2. The project is under the direction of County Public Works Commissioner John C. Guibert, with Deputy Commissioner Harold Sherman in charge of the work.

Philadelphia Partially Lifts Garbage Grinder Ban

COMPLETION of the new Northeast sewage-treatment plant has allowed the lifting of Philadelphia's ban on kitchen garbage grinders in the sections of the city now serviced by that plant. The permission was granted by an ordinance passed by the City Council.

The use of the grinders in the balance of the city is being withheld pending the completion of the Southwest treatment plant which is scheduled for operation late in 1952, and the completion of the Southeast plant the following year.

The issuance of permits for these grinders is through the Bureau of Sanitation.

Philadelphia has never specifically prohibited garbage grinders, but did refuse permits for them under an 85-year-old ordinance which prohibited dumping deleterious matter into the sewer.

In order to be approved, grinders are subject to and must pass the standard test given by the city. Each grinder submitted for testing by the manufacturer is required to grind materials such as celery, carrots, and other vegetables.

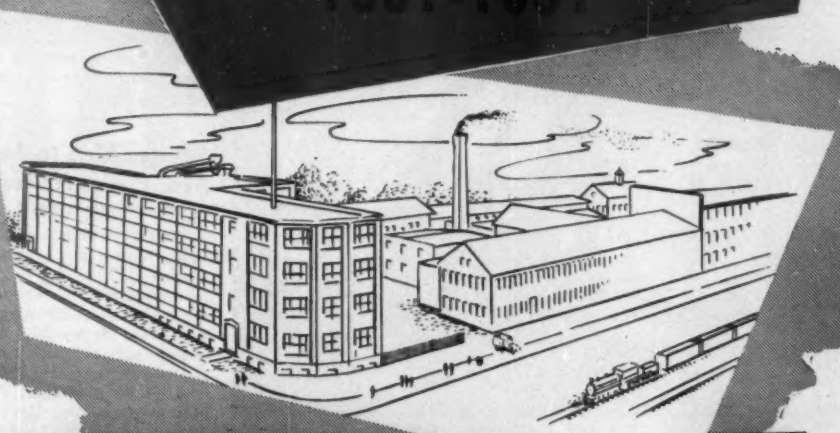
Sewage Men to Inspect New York's Newest Plant

NEW YORK CITY'S Owl's Head sewage-treatment plant, whose design incorporates a record-breaking number of "firsts" in this city's sewage-treatment-construction program, will be the subject of examination and discussion by the Metropolitan Section of the Sewage and Industrial Wastes Association to be held October 16, in New York City. S. W. Steffanson, Project Engineer for New York City's Department of Public Works, will guide the inspection of the plant and will deliver a paper on the details of its construction.

This plant, a portion of the general program of sewage-works construction being undertaken under the direction of Public Works Commissioner Frederick W. Zurmuhlen, is unusual for its many innovations in New York City practice. It is the city's first plant to be designed exclusively as a "high-rate" activated-sludge plant, known more commonly as modified aeration. It is the first to enclose and ventilate the aeration and settling tanks, and to ozonate the exhaust air as an odor-control measure. It is the first time in New York City also, and only the second time in the United States, that low-pressure storage of the digester gas has been adopted. The plant has the first of the retractable air-diffuser tubes to be used in New York City and the first prestressed digestion tank and the first Parshall metering flume to be used in New York City sewage works.

The plant has been especially designed to avoid any possible odor nuisances that might cause difficulty because of the plant's location.

100 Years
IN THE PUBLIC SERVICE
1851-1951



During 1851, in the City of Boston, Massachusetts, was made the first practical application of the Morse telegraph to fire signaling, providing a public and always accessible means for calling the fire department. John N. Gamewell shortly thereafter, acquired patent rights for the system of fire signaling thus applied in Boston and which has since become universally known as The Gamewell Fire Alarm System.

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Public Safety

Better Police Records Needed for St. Louis Juveniles

POLICE-RECORD systems are somewhat complex because of the variety of types of incidents and the large number of persons involved. These records serve two primary purposes: (1) they provide the entire department with a central source of data about the individual offenders and offenses; and (2) they provide executives of the organization with information needed for administrative control and direction of the personnel.

In St. Louis, Mo., the primary responsibility for the maintenance and custody of police records rests with the Bureau of Records of the St. Louis Police Department. The Crime Prevention Division, however, because of its special concern with rehabilitation as well as detection of juvenile offenders, has established certain special records for use in the Division. These records and their general relationship to the overall police-records system will be discussed in this section of the report.

Central Records on Juveniles

Every police incident must be recorded. If any person involved in a police incident is arrested, an arrest-register form is filled out in the district station house. A copy of this register form is forwarded to the Bureau of Records, and an arrest-record card and an arrest-punched card are prepared. These arrest cards are the records which the Department uses for operating controls and stations.

Problem of Non-Arrests

The arrest-record card and the card punched by International Business Machines are not prepared when an individual involved in a police incident is apprehended but not arrested. In such cases, the Department has no central records on individuals involved. It has the original report and the officer's follow-up reports, but these are largely narrative in form, and are prepared and filed on the basis of the police incident rather than on the basis of the individuals involved, and hence are not readily usable for statistical analysis and control of individual offenders.

The lack of complete central records on persons involved in police incidents but not arrested presents a serious problem in the case of juveniles. It is a problem because the St. Louis Police Department follows a policy of arresting only those juveniles who have committed the more serious offenses.

There are several possible remedies for this lack of complete central records on juvenile offenders. One would be for the Department formally to arrest and book all juvenile offenders. Such a policy, however, would appear to be inadvisable, because juveniles committing minor offenses would be handicapped with the stigma attached to a police-arrest record.

District Record

Each of the juvenile officers and policewomen in the districts maintains records of juveniles with whom they have contact. Generally, they receive copies of the original and supplementary reports on each police incident involving juveniles in the district. These copies are given case-file numbers by the juvenile officer and placed in the office file, usually in the order received. A bound alphabetical index book is usually maintained concerning individuals noted in reports. In some districts, a juvenile court social-history form is partially prepared on some offenders and filed with the police reports.

In addition, most of the district juvenile officers and policewomen maintain cards on juveniles placed under their conduct supervision. These cards, 4 by 6 inches in size, provide space for entering certain basic data about the juvenile, plus a record of the office and home visits made in reference to the case. They are filed alphabetically, separate from the police reports.

A weekly activity report is made by each juvenile officer and policewoman to the commanding officer of the Crime Prevention Division. These reports are consolidated and used as a basis for the Division's annual report, and they also provide the Commander of the Division with information on the activities of the personnel.

Recommendations

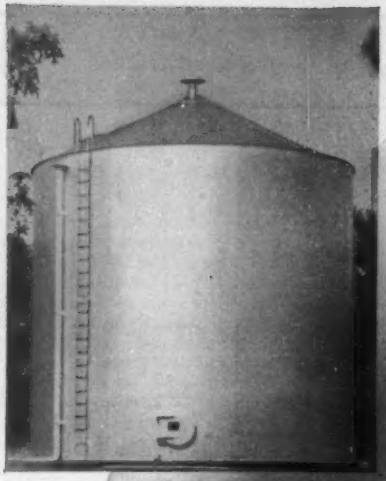
Following recent analysis of the supervision cards, it was recommended that there be an individual case history and supervision form of 8½ by 11 inches. It was also proposed that individual manila case-holders be filed alphabetically in each office for each individual on whom a police report has been made. In this folder would be placed the case history and supervision form, police reports, correspondence, special records, and other data on the individual. The case folders on individuals under active supervision could be flagged for easy identification and location, and checked periodically to eliminate the cases of juveniles over 16 years of age. When a juvenile moves from one area of the city to another, his complete case-folder would be forwarded to the juvenile officer in the district to which he has moved. With the installation of this system, the present inadequate filing procedure could be abolished. In a few districts where nicknames are a problem, a memorandum index by nicknames may be needed.

Two-Way Radio Contact With Field Crews Aids City Departments

Two-way radio dry-battery pack set for use in the field.

COMMUNICATION contact can now be made from any point in the field by two new pack sets which feature a dry-battery power supply and weigh 19 pounds each. These sets were developed by the Link Radio Corporation, 125 West 17th Street, New York 11, N. Y.

They are for operation, respectively, in the 25-50-megacycle and 152-174-megacycle bands. They are for fire and police service and for civil defense. Water, electric, sewer, and street field crews will find these new units practical for communication with their base stations.



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In Wrentham, Mass.

In Middletown, Conn.

In Harwich, Mass.

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Refuse Collection and Disposal

A Weighmaster Effects Incinerator Savings

THE added expense of an incinerator weighmaster is more than offset by the savings he effects and the accurate operating data that he provides. In our city, we recently hired a weighmaster. He now keeps an accurate check on the time of all loads, both combustible and non-combustible, and gives a little incentive to the employees to get their work done promptly and well. The weighmaster uses a Fairbanks-Morse 20-ton platform scale.

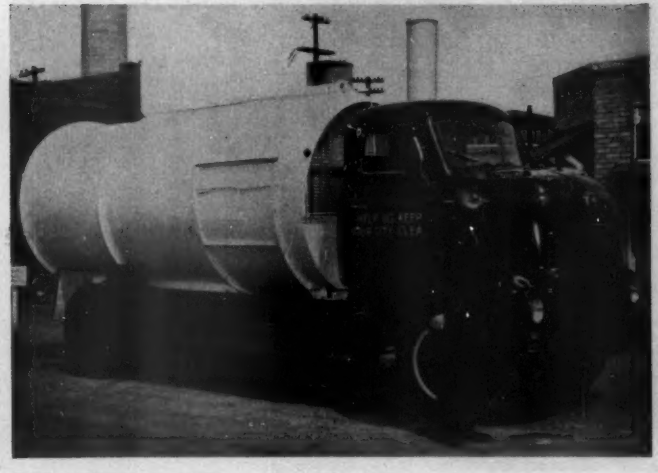
This year we have placed three 16-yard Roto-Pacs in service. We have made a close check on the performance of these new trucks and find that through experience the men gradually have increased their loads. Now they are running a steady average of slightly over three tons per load; to be exact, 3.04 tons. Our refuse is, therefore, compacted to exactly 400 pounds per cubic yard, based on thorough measurements.

In considering these figures, however, the fact that we collect only garbage and other combustible material must be considered. We have not used these trucks for the collection of ashes and non-combustibles, but expect to use them for experimental purposes only in the near future.

We are now carefully weighing the incinerator ash, and in April found the weight of garbage and combustibles after incineration was reduced 78.8%. In May, the reduction was 82.5%.

I. J. CASEY, JR., *Town Engineer*
Irvington, N. J.

Weighmaster Edward Kocon records the weight of a loaded Roto-Pac truck on its way to the incinerator.



Wasteland Reclaimed

In Eau Claire, Wis., a Caterpillar tractor and a Link Belt speeder dragline team up to reclaim eroded wasteland while disposing of refuse by the sanitary-fill method.

Little Rock Adds New Refuse Trucks

Curtis Woods, Sanitation Department head, inspects the newest addition to Little Rock's Sanitation Department truck fleet, an International cab-forward truck bearing a 15-cubic-yard Pak-Mor refuse body.

New TRUCK LOADER
CUTS COST of *Many* OPERATIONS
For these CITIES

The time, labor and equipment which users are saving with the new Holmes-Owen truck loader has made this equipment increasingly popular with municipalities as shown by the number of cities now having these units in operation.

The versatile one-man operation of this hydraulically operated unit permits the truck driver to do his own light digging, grading, loading and cleaning up . . . without the need for additional manpower or the use of more costly equipment. Loading, hauling and unloading is therefore handled faster, more efficiently and at a substantial reduction in cost. The loader lifts ½ yard per bucket, loads average truck in 4 minutes and can be installed on most 1½ to 2½ ton trucks. Ask your equipment dealer for details or write factory direct.

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Kansas City, Mo.
Knoxville, Tenn.
Lansing, Mich.
Philadelphia, Pa.
St. Petersburg, Fla.
Sarasota, Fla.
Talladega, Ala.
Tuscaloosa, Ala.

Street Cleaning and Snow Removal

Ice-Control Salt Treatment —Does It Damage Autos?

SOME danger of accelerated metal corrosion by the use of salt for ice control may exist, agreed F. L. LaQue and E. J. Hergenroether of the International Nickel Co., Inc. This danger is not great enough, however, to recommend discontinuance of these treatments, which are so valuable in preventing accidents. Messrs. LaQue and Hergenroether expressed this opinion at the Society of Automotive Engineers' annual summer meeting at French Lick, Ind.

Chlorides *can* aggravate corrosion, they agreed, but they are not the most important factor in auto deterioration, nor would deterioration cease if the use of salts was discontinued.

The greatest corrosion of bare steel, they found, occurs with a very small percentage of chloride. Pure water itself is more corrosive than salt concentrations beyond 1% or 2% sodium chloride. Steel specimens exposed to atmospheric corrosion without contact with brine were twice as corroded as duplicate specimens fastened under a test car driven over a salt-treated road and garaged in a humid atmosphere. Humidity, they concluded, is a more important factor than salt treatment in determining the extent of corrosion of auto underbodies.

The discussion called special attention to the efforts being made to relieve the possibility of metal-salt corrosion by the use of inhibitors such as certain polyphosphates.*

*EDITOR'S NOTE: Two phosphate inhibitors are in use today: Banox, made by Calgon, Inc., Pittsburgh, Pa., and Nalco 816-C, made by National Aluminate Corp., Chicago, Ill.

J. B. Carter (left), City Engineer, and V. B. Kee (right), Street Cleaning Superintendent, inspect Little Rock's new sweepers.

How Little Rock Boosted Street-Sweeping Efficiency

LAST year Little Rock took second place in its class in the Cleanest City contest for cities with a population of more than 100,000, using its older equipment. This year J. B. Carter, City Engineer, has determined to win first place, since his street-sanitation forces have been strengthened by two Wayne Model 1-450 street sweepers.

Their operation this year, he finds, has enabled his crews to sweep all the streets in a week. Formerly this required two weeks. The crews find also that they can get a cleaner gutter. The faster time has been made possible by the high speed of the Wayne machine, its increased hopper capacity, and its large water tank.

To improve morale and efficiency, operators have been equipped with white overalls and caps. The "rose" motif is across the backs of the uniforms.

Extended or Close-Order Snow Removal

Snow blowers are used in both residential and business districts of Toronto, Can. Shown above is a Sicard snow blower using its chute to direct snow into a waiting truck.

In a more open area of the city, the same blower is employed to project the snow across a roadway into an open field.

Airports and Aviation

Norfolk's New Terminal Building Simplifies Air Traffic

ON MAY 5, Norfolk dedicated its new $700,000 airport-terminal building. The building is part of a $1,000,000 project which is developing an entirely new area on the airport property. The new building is adjacent to the Azalea Gardens, one of the most beautiful spots in Tidewater Virginia. Passengers awaiting planes can step across the street and wander through the gardens which have some 100,000 azaleas and countless other flowers which are in constant bloom.

The building, of block design, was designed by Architect Vernon A. Moore. The building is air-conditioned throughout. It is heated by two boilers, either of which can heat the entire building. One of the striking features of the building is that all baggage counters are on the outside, which facilitates the handling of baggage.

Capital, National, and Piedmont Airlines are occupying some 3,800 square feet of floor space in the building. Each has a ticket counter in the lobby. The passenger waiting space is 63 by 43 feet and overlooks the field.

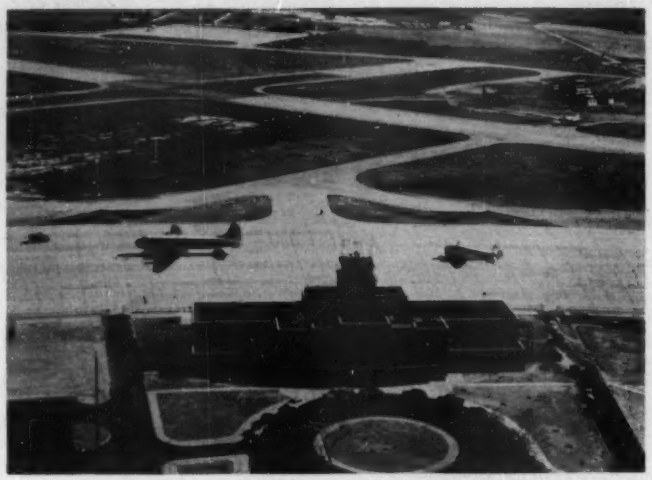
Occupying one wing on the first floor of the building are a coffee shop decorated in green and beige, a barber shop decorated in burgundy, and ceramic-tile rest rooms. The other wing contains 6 telephone booths, Western Union telegraph booths, and 16 steel lockers. The remaining space in both wings is utilized by the airlines.

The beautiful Azalea Room (the dining room) decorated in dubonnet and green, is on the second floor overlooking the field, affording a full view of airport activities. It will seat over 200 persons. The chairs in the dining room are of natural maple with two-tone green upholstery. The kitchen on the second floor services the dining room and coffee shop below. It is equipped with the most modern equipment.

The airport manager's offices are also on the second floor, as well as the C.A.A. Communications offices and the main Weather Bureau.

The Radar Room and operator's office are on the third floor. The fourth floor is occupied by a radio room. The fifth floor is the tower which has all modern up-to-date equipment.

The terminal building and control tower are simplifying air traffic in what is probably the most complex air-traffic locality in the country. With the new control tower, surveillance radar will aid landings in foggy weather. This is in addition to the instrument-landing system (ILS) already in operation. The radar system allows the operator to see the exact position of the plane that he must bring in.



An air view of Norfolk's new airport-terminal building.

Air traffic is complicated because of military flying, which is an important factor here. Nevertheless, civilian rather than miltary traffic is given priority when weather is bad. All traffic, military and civilian, within a 25-mile radius is controlled from the Norfolk tower when conditions are such that planes are "on instruments."

The Norfolk Municipal Airport is operated by the Norfolk Port Authority. E. O. Jewell is General Manager of the Authority, and W. H. Lyons is Airport Manager.

Some Airport Runway Design Principles

AIRPORT pavements, explained Henry Aaron, Chief, Paving and Soils Branch, Civil Aeronautics Administration, like all pavements, are subject to the impact of dynamic and static loads. The behavior of the pavements under these loads is influenced by the following operating characteristics:

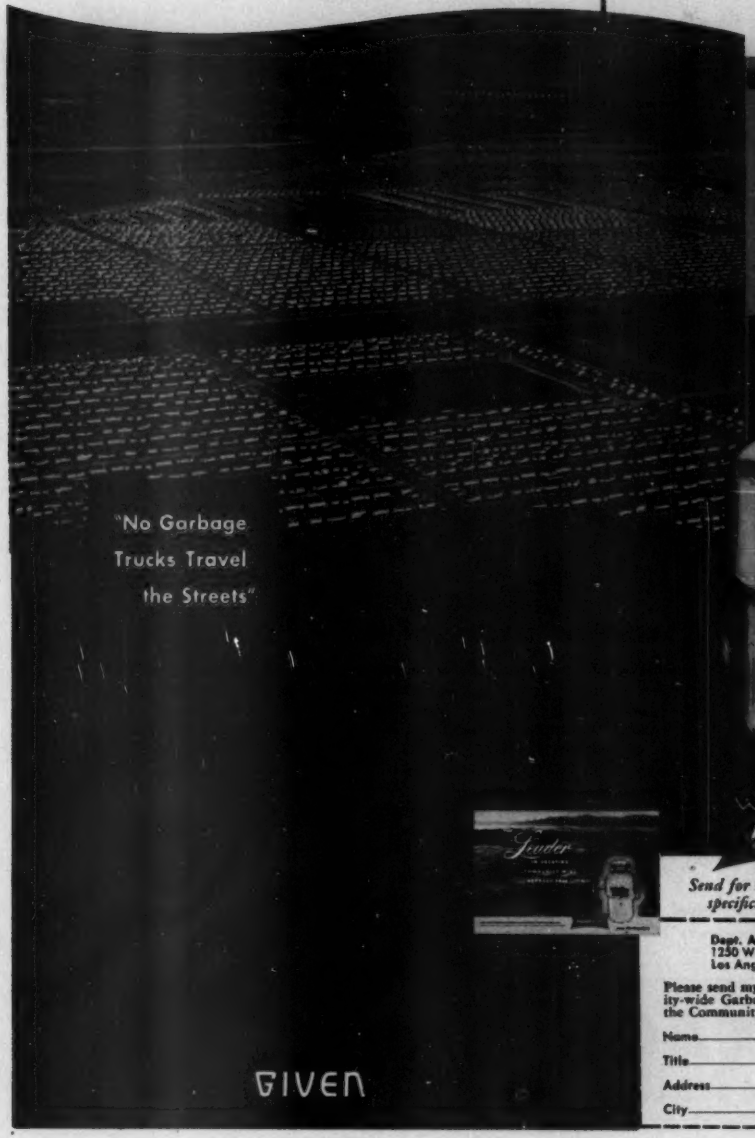
1. When a plane is parked, with its propellers not rotating, the load on the pavement is static and equal to the gross weight of the aircraft. This is the heaviest load imposed on the pavement.
2. The gross load on the pavement is reduced when the plane is standing and the propellers are rotating at high speeds.
3. The load transmitted to the pavement decreases as the aircraft begin to taxi and continues to decrease as the taxiing speed increases, equaling zero when the plane takes off.
4. The effects of impact, in a normal landing, may be ignored in pavement design.

Mr. Aaron explained these principles before the American Road Builders' Association annual meeting held recently in Milwaukee. He explained further that service records have shown definitely that taxiways, aprons, turnarounds, and warm-up pads at the ends of runways are the most critical areas from the standpoint of aircraft use. Pavement failures have occurred on these areas, while the pavement of the same type and thickness on the runway proper showed no signs of distress.

17,150 WASTE KING *Pulverators* in one community!

dwarfing all other city-wide garbage disposer installations . . .

LAKEWOOD PARK
California



Send for illustrated brochure written specifically for Public Officials.

Dept. AC9, Given Manufacturing Co.
1250 Wilshire Blvd.,
Los Angeles 17, Calif.

Please send my complimentary copy of "Community-wide Garbage-free Living." I am interested in the Community-wide Garbage Grinder Plan.

Name_____

Title_____ Dept._____

Address_____

City_____ State_____

KEEP AIR COMPRESSORS ON THE JOB—

regardless of operating conditions . . . with TEXACO air compressor oil

What's the best air compressor oil to keep your compressors working and your maintenance costs low? That depends on your operating conditions. But it *must* be an oil especially designed to meet those conditions. Texaco has it. For example—

★★ To assure clean operation and reduce wear under *normal conditions*, use a Texaco *straight mineral* air compressor oil.

★★ To *overcome rust* conditions in compressors, inter- and after-coolers, lines and receivers, use a Texaco *rust-inhibited* air compressor oil.

★★ To *avoid carbon and gum* formations, use a Texaco heavy-duty air compressor oil, with special detergent and oxidation-resistant properties.

★★ To *eliminate excessive wear* caused when moisture condensation in cylinders washes away lubricant, use a Texaco *compounded* air compressor oil.

A Texaco Lubrication Engineer will gladly help you select the one proper Texaco air compressor oil to assure you greater efficiency and lower costs under your particular operating conditions. And don't forget to ask him about the Texaco Simplified Lubrication Plan for *all* your equipment. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 E. 42 St., New York 17, N. Y.

DRILLS of all types run better with *Texaco Rock Drill Lubricant EP*. One user states: "We are amazed at the performance of this oil in comparison with what we had been using. We have cut oil consumption 50% and have shown a remarkable reduction in maintenance on all our drills."

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Get What You Want—No Charge!

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers at the addresses given. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, *470 Fourth Ave., New York 16, N. Y., and we will see that catalogs are sent to you without expense or obligation.* 9/51

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Name ..... Position .....

Address .....

Mechanically Stoked Incineration For Municipal Refuse

805 Mechanically stoked incineration as provided by Morse Boulger is the modern way to dispose of rubbish, garbage, sludges, and wastes, reports the Morse Boulger Destructor Co., 205-R E. 42nd St., New York 17, N. Y. The equipment is used for municipal refuse, sewage sludge, and industrial wastes. Write for Bulletin 111-A which gives full details.

Earth-Removal Equipment

806 The new, larger engine-mounted hydraulic Baker bulldozers, gradebuilders, and root rippers manufactured to match the new and more powerful line of Allis-Chalmers HD-20, HD-15, HD-9, and HD-5 tractors are described in *Engineering Bulletin No. 897* just released by The Baker Mfg. Co., Springfield, Ill. The company also has available *Bulletin No. 892* on its line of sheep's-foot tamping rollers. The catalog describes the specially designed feet, shaped to compact the soil without disturbing it on pull-out.

Chlorine Dispenser For Water Treatment

807 The F&P Rato-Chlor chlorine dispenser is employed for swimming pool and drinking water purification, sewage treatment, chlorination process, and algae control. Its principle of operation is the dry-vacuum solution feed or dry-gas feed, and its capacities 1-6000 pound-day chlorine, or over 6,000 pounds per day. Catalog 61 describes the equipment in detail and may be obtained from the Fischer & Porter Co., Dept. IT-3J, Hatboro, Pa.

Full Circle Clamp Coupling

808 Smith-Blair, Inc., South San Francisco, Calif., manufactures a lightweight, permanent full circle clamp coupling. The company states it can be installed under water and under 85-pound pressures by "feel" alone. Its matched copper-armour gaskets go right into proper position without coaxing. It assures a complete shut-off of leaks on the first tightening of the clamp. Write for bulletin.

Safety Lanterns

809 Safety lanterns manufactured by the R. E. Dietz Co., Syracuse 1, N. Y., include the Dietz Night Watch lantern which burns for 100 hours. It releases an intense straight-line pencil beam, visible from all angles. Red globe lanterns burn bright or medium for long hours, regardless of weather conditions. Dietz highway torches have non-tip bases, will burn for 30 hours, and are leak proof and weather proof.

Traffic Safety Sentinels

810 Flexo-O-Lite reflective glass beads for traffic safety are clearer by day and brighter by night. Available in a variety of desired sizes, they meet specific standards for top application to beaded traffic lines and for admixture to traffic paint. Free literature will be sent by the Flexo-O-Lite Mfg. Corp., 8301 Flexo-O-Lite Drive, P. O. Box 3066, St. Louis 23, Mo.

Valve Locator-Leak Detector

811 The Goldak Co., 1544 W. Glenoaks Blvd., Glendale 1, Calif., manufactures a box and valve locator, Model 620, which gives pin point detection of Buffalo boxes, valves, covers, and buried metals. Weighing 8 pounds, it is sturdily constructed for all-weather use. Other equipment of the company is the Model L46 senior leak detector for detecting leaks in water lines; the featherweight Model 67 pipe locator; and the Dualtronic combination pipe locator and leak detector.

Automatic Water Valves

The Ross Valve Mfg. Co., Inc., 8 Oakwood Ave., Troy, N. Y., on request will send details on its automatic water valves. The altitude valves are for control of elevation and heads into and out of tanks, basins, and reservoirs; combination valve, which permits flow in one or both directions, and remote control valve, that can be adapted for use as primary or secondary control on any of the hydraulically controlled valves.

Pumps, Generators, One-Man Chain Saws

813 Gasoline engine pumps, generators, and one-man chain saws are made by the Homelite Corp., 108 Riverdale Ave., Port Chester, N. Y. The pumps have fast automatic priming, 20-foot suction lift, and capacities up to 15,000 gph. The generator can be used to operate time-saving, labor-saving electric power tools. The lightweight chain saw will cut an 18-inch pine in 16 seconds, an 18-inch oak in 28 seconds, and cut trees up to 4 feet in diameter.

Reflectorized Street Signs

814 A free descriptive pamphlet and full price list on the Cataphote beaded sign kit will be sent by the Cataphote Corp., Toledo 10, Ohio. This is a new, extra low cost, easy-to-apply method of reflectorizing street markers. The manufacturer states that its process gives extra light to signs at half the usual cost.

Water Meters

815 Water meters in all sizes and types are made by the Worthington-Gamon Meter Division, 296 South St., Newark 5, N. J. Complete information will be furnished upon request.

Centrifugal Pumps For Water Supply

816 Centrifugal pumps are built by The Weinman Pump Mfg. Co., 298 W. Spruce St., Columbus 8, Ohio. The Nelson Road Pumping Station in Columbus, O., uses 7 Weinman pumps which give uninterrupted service. In use are four 10-inch Type L-3, and three 6-inch Type L-1. Write for literature describing the equipment.

Cut Digging Costs With New Power Digger

817 The new Sherman power digger cuts digging costs of municipalities, reports the manufacturer, Sherman Products, Inc. Its patented, actuated bucket gives selective digging action, better loading, and greater versatility. All-hydraulic action is made possible by heavy-duty hydraulic cylinders. The machine digs ditches, trenches, footings, culverts, basements, and other excavations. It handles roots, rocks, hard clay, and oiled-road surfaces. For literature, write to Sherman Products, Inc., Dept. No. 111, Royal Oak, Mich.

These Submerged Water Lines Never Leak

818 When you lay a line carrying purified water and have to place the line under a river, one simply can't afford to take chances. The best policy is to have the work done by someone who is experienced and can prove his skill and experience by his list of successful jobs of this type. Such is the Boyce Co., of Clearwater, Fla., which has laid submerged pipelines in difficult locations throughout the world. Write them, get their list of installations, and ask for estimates on your particular project.

Street Lighting Standards Defy Hurricane's Wrath

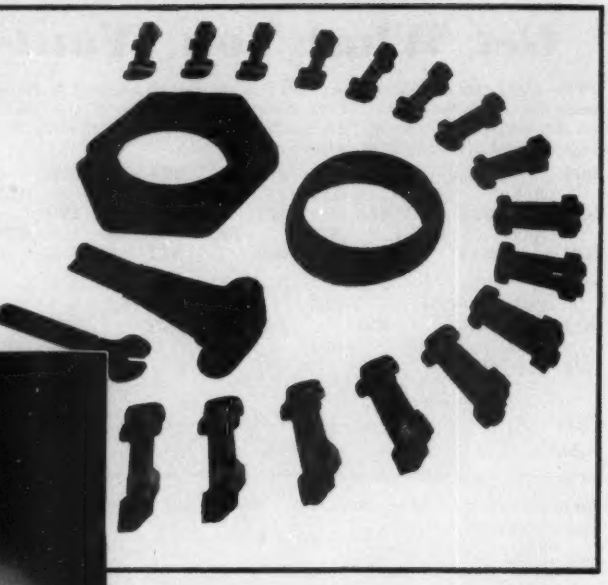
819 The Kerrigan Iron Works, Inc., 274 Madison Ave., New York, N. Y., on request on your official letterhead will send its free street-lighting catalog, describing its weld-forged standards. The company proudly reports that while Miami's worst hurricane in 1926 destroyed telephone and electric poles and other equipment, the Kerrigan weldforged standards remained impervious to the storm damage.

Water Controls

820 The Automatic Control Co., 1005 University Ave., St. Paul 4, Minn., on request will send its new *Autocon Bulletin No. 1110*, featuring Autocon Multi-Pump Tanktrols for maintaining liquid levels in elevated tank systems. Also available is *Autocon Bulletin No. 1210* on Autocon Multi-Pump Mototrol for elevated tank systems using two or more pumps.

(Please Turn to Page 27 for More Literature)

ALL YOU NEED



IS: A RATCHET AND OPEN END WRENCH, THREE RUBBER GASKETS, THREE CAST IRON FOLLOWER RINGS AND A HAND FULL OF BOLTS AND NUTS ***TO INSTALL***

the New
SMITH CUT IN VALVE AND SLEEVE

Gone are the days of—large costly excavations—melting furnaces and pouring pots—pouring and caulking lead joints—when the New All Mechanical Joint Smith Cut In Valve and Sleeve is used.

The Cut In Valve can be installed rapidly, in fair or stormy weather on Cast Iron A.W.W.A. and Federal specification water mains, by unskilled labor, using only two wrenches.

Moulded rubber gaskets fit into machined "Stuffing Box" type joints, guaranteeing a permanent leak-proof seal.

Smith Cut In Valves are manufactured in compliance with the A.W.W.A. Gate Valve specification, and all parts are interchangeable with like parts of Smith A.W.W.A. Gate Valves.

Write for Bulletin No. MJ2.

34

FIRE HYDRANTS · VALVES · SINCE 1896

THE A.P. SMITH MFG. CO.

EAST ORANGE, NEW JERSEY

Which Catalogs Interest You?

Write directly to the manufacturers, or use the coupon on page 25

2-Way Radio For Public Safety

821 *2-Way Radio for Public Safety* will be sent free of charge by RCA Engineering Products, Dept. T-102, Camden, N. J. The booklet tells how 2-way radio in public-safety services works and how it can be employed for speeding law enforcement, fire-fighting operations, and for municipal and state communication networks.

Pipe Locator

822 The position and depth of pipes, tees, valves, and buried tools are quickly and accurately detected by the new Pathfinder pipe locator, reports the Pathfinder Co., 1726 Beverly Drive, Pasadena 7, Calif. It is an economically priced, powerful precision unit. The company offers a liberal trade-in plan. Write for further information.

Adjustable Steel Landing Piers

823 The new Hussey adjustable steel landing piers are described in *Catalog No. 51 on Water Sports Equipment*, published by the Hussey Mfg. Co., Inc., North Berwick, Maine. Of a demountable type, the equipment's runway sections can be dumped off into the water and floated ashore and easily hauled up. Also reported are the manufacturer's diving boards, and swimming floats.

Rotating Drum Incinerator

824 Right off the griddle is a new booklet issued by International Incinerators, Inc., Walton Bldg., Atlanta 3, Ga., describing the inclined rotary refuse incinerators. This type of design features uniform, continuous charging and burning; it has a special pre-drying stage that aids burning; and is built so that the heat generated can be used for power production if needed.

Does Complete Sanitary-Fill Job

825 The Drott Bullclam powered by an International crawler is a one-man unit designed to handle all four steps of the complete sanitary-fill job, reports the Drott Mfg. Corp., Milwaukee 8, Wis. It scoops out the excavation, spreads the refuse, krushes and grinds the bulk, compacting and ironing it out with the crawler power behind the specially curved front of the Bullclam. Then it spreads and grades the cover dirt to finish the job.

Fence Protection

826 On request, The Colorado Fuel and Iron Corp., 575 Madison Ave., New York 22, N. Y., will send information on Realock fence which provides real locked-in protection for grounds and property. All fittings have bolts placed so that the nuts are removable only from the inside, thereby insuring safety from intruders. The equipment is heavily galvanized by a special process and gives weather-resistant, durable service with little or no expense for maintenance.

Prevent Stream Pollution With This Lime Method

827 These days many municipal officials are faced with the problem of stream pollution. To help eliminate this pollution, The Finishing Lime Association of Ohio, 602 Home Bank Bldg., Toledo, Ohio, composed of manufacturers of dolomitic lime located in Northwestern Ohio, has prepared a booklet, *Lime—the Low-Cost Way to Prevent Stream Pollution*, in which it discusses its method. Advantages of dolomitic lime as a neutralizer are its high neutralizing power, low sludge volume, and low operating cost.

High-Capacity Chlorinizer

828 *Bulletin No. 640-G27* on the new Model HCVS Volumetric Chlorinizer is reported by Builders-Providence, Inc., 358 Harris Ave., Providence, R. I. It describes the high-capacity visible-flow Chlorinizer which is designed to meter chlorine gas accurately at rates up to 6,000 pounds per 24 hours. There is also a discussion of operation of the rate of flow indicator, low maintenance costs, and installation.

Four Tractors For Municipal Use

829 The Gibson D line now includes four great tractors bringing extra speed, power, and versatility to tractor users, reports the Gibson Mfg. Corp., Longmont, Colo. Available literature describes the two new models, the Super D and the Super D2, featuring many improvements, and the time-tested Model D and Model SD.

Street Sweeping Problems?

830 The Wilshire power sweeper may be the solution to them. This machine picks up everything from cigarette butts to pop bottles in one easy operation. Write to Dept. C-3, Wilshire Power Sweeper Co., 526 W. Chevy Chase Drive, Glendale 4, Calif., for literature or for requesting a free on-the-job demonstration.

Derrick-Digger Attachment Available for Small Trucks

831 Tel-E-Lect Products, Inc., 10029 Minnetonka Blvd., Minneapolis 16, Minn., has announced the addition of the compact Model 325 to its line of pole derricks and diggers. The company states that any ¾- or 1-ton truck with ordinary service body can accommodate this unit. As a materials handler, the 325 will pick up poles and heavy equipment.

Tax Accounting Machine

832 The Underwood Sundstrand, automatic accounting machine, can be used for tax, utility, or payroll accounting, or for appropriations or inventory work. The "Mechanical Brain" controls all computations automatically. The simple 10-keyboard makes fast and accurate touch operation possible. Full details will be sent by the Underwood Corp., One Park Ave., New York 16, N. Y., which also manufactures typewriters, adding machines, and other office equipment.

Clears Cobwebs of Confusion For Clay Pipe Industry

833 *Let's Sweep Away the Cobwebs Confusing the Clay Pipe Industry* is the title of a booklet by S. O. McFall, president of the Universal Sewer Pipe Corp., and United States Concrete Pipe Co., 1500 Union Commerce Bldg., Cleveland 14, Ohio. It will be sent free of charge to interested municipal officials. Mr. McFall points out that clay pipe's tonnage volume is immense today; its usage grows; that loose joints are no longer an unavoidable hazard; seepage and root infiltration can be, and are controlled, and tight joints are readily obtainable.

For Property Valuation

834 The J. L. Jacobs & Co., engineers, of 53 W. Jackson Blvd., Chicago, Ill., on request will supply its publication. *Property Valuation and Assessment Equalization Service*. The booklet gives the firm's examples of its technical service on property valuation and tax administration to specific agencies, and main objectives and procedure for uniform property appraisal and property assessment equalization.

Self-Heating Asphalt Smoothing Iron

835 Surfa-alick is a self-heating asphalt smoothing iron that is hot in 10 minutes and retains its heat all day long. Compact, rugged, simple, and safe, it is a money-saving device for municipalities. For complete details, write to the J. E. Woods Mfg. Co., 1516 First St., San Fernando, Calif.

2-Cycle Diesel Engines

836 The Detroit Diesel Engine Division of the General Motors Corp., 13400 W. Outer Drive, Detroit 23, Mich., announces a new catalog describing the Division's complete line of Series 71 2-cycle diesel engine. The book covers single- and multiple-engine units from 2 to 24 cylinders, with power ranging from 32 continuous to 780 intermittent horsepower.

Right-Angle Gear Drive Gives 24-Hour Service

837 The Johnson right-angle gear drive provides 24-hour power service for continuous water supply, flood damage, reserve power, sewage, and is available in a number of sizes, types, and ratios to meet varied application. An illustrated catalog may be obtained by writing to the Johnson Gear & Mfg. Co., 8th & Parker Sts., Berkeley 10, Calif.

Air Compressors

838 Jaeger "Air-Plus" compressors deliver 15 to 25% more air at lowest cost per cubic foot of any compressor on the market, claims The Jaeger Machine Co., 505 Dublin Ave., Columbus 16, Ohio. The new standard Jaeger "Air-Plus" delivers 125 feet of 100-pound air, instead of 105 feet. The company also produces pumps, mixers, hoists, truck mixers, and paving spreaders and finishers.

For Garbage Disposal And Sewage Treatment

839 The Gruendler Crusher and Pulverizer Co., 2915 N. Market St., St. Louis 6, Mo., on request will supply bulletins on its equipment for sewage treatment, commercial garbage grinder, and garbage disposal unit. *Bulletin SG10* discusses screenings shredder, garbage grinder, and dry sludge shredder; *Bulletin No. G400*, the commercial garbage grinder, a sanitary, rapid, and commercial garbage disposal method, and *Bulletin Series "G,"* the Gruendler garbage disposal unit. Write for your free copies.

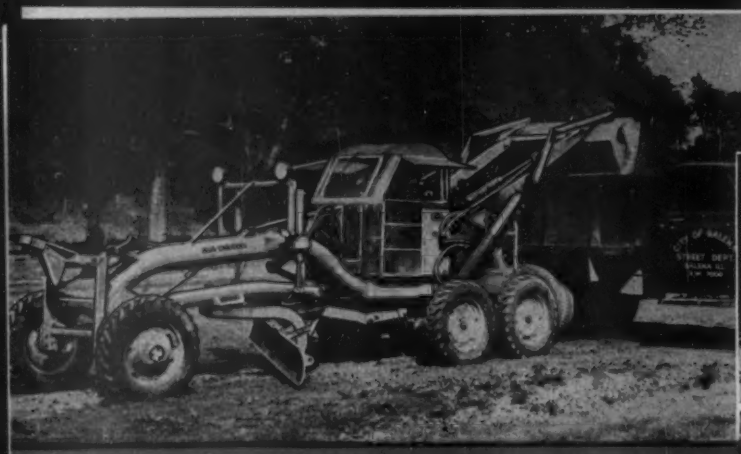
Safer School Crossings

840 You get better protection for the children at less cost to the taxpayer with the Automatic Policeman made by Crown Signals, Inc., 1732 "E" Ave., NE., Cedar Rapids, Iowa. The special design of the signal light insures that the warning beam will command attention of the motorist. Literature available from this company describes both the flasher signal and the pedestrian-operated unit.

Save on Man-Hours With Mechanical-Joint Valves

841 Eddy mechanical-joint valves mean a saving of man-hours on new installations, according to the Eddy Valve Co., Waterford, N. Y., subsidiary of James B. Clow & Sons. One man can do an all-mechanical task on pipe, fittings, valves, and hydrants. Valves are available in sizes from 3 to 12 inches for use on both sand-cast and centrifugally cast iron water pipe.

(See Page 29 for More Bulletins)



HOW TO GET

More Mileage FROM YOUR Road Maintenance Dollar

USE THE ALL-AROUND, LOW-COST ALLIS-CHALMERS MODEL D MOTOR GRADER—

Produces at Both Ends... As Well as in the Middle

One man handles the work of a crew with the low-cost Model D! Does a better grading job with tandem drive and other big grader features . . . and is an all-year, all-around outfit with easily attached accessories.

In Galena, Ill., for example, a Model D with loader, scarifier and snowplow attachments speeded all phases of road maintenance, snow removal and material handling . . . *and decreased manpower requirements for these jobs by more than 40 percent!* That's cutting labor costs almost in half.

Like Galena, you can get more mileage from *your* road maintenance dollar with the versatile Model D. Let your Allis-Chalmers dealer prove it . . . NOW!

Some of the Easily Mounted Attachments that Make the Model D the Most Useful, All-Around Grader on the Market Today

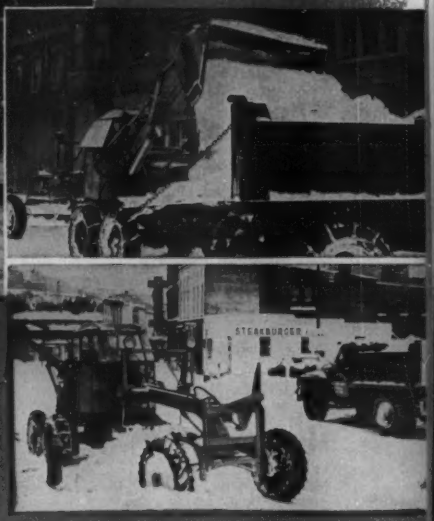
REAR-END LOADER. Hydraulically operated, ⅜ cu. yd. bucket . . . available with bucket teeth.

V OR BLADE-TYPE SNOWPLOWS. Interchangeable, hydraulically operated. Blade plow may also be used for backfilling and light 'dozing.

SCARIFIER MOUNTS behind grader blade . . . makes full use of weight and traction . . . steering is much easier.

WINDROW ELIMINATOR. Saves extra passes by feathering out windrows.

Also: All-View cab — easy to remove and replace . . . heavy-duty front tires and other special accessories.



SNOW REMOVED AT THE RATE OF 150 YARDS PER HOUR in Galena's business section. Operation included windrowing snow with grader blade, then loading into trucks with rear-end loader. Parking facilities were quickly restored. V-type snowplow was used on the Model D to open outlying roads.

ONE WEEK'S GRADING IN ONE DAY. The Model D does more grading in a single day for Galena than the old tractor and towed grader did with two men in one week.

WORKS ON STEEP GRADES—WINTER AND SUMMER. Many grades are more than 22 percent in Galena's hilly terrain. Tandem drive and rear-engine design give the Model D ample power and traction to work these steep grades the year around — dozing, sliding, plowing snow.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Obtain this Literature Free of Charge!

Write directly to the manufacturers or use the coupon on page 25

Fog Insecticide Applicator

842 TIFA, a product of the Combustion Division, Todd Shipyards Corp., 81-16 45th Ave., Elmhurst, Queens, N. Y., is a fog insecticide applicator which can handle solutions, emulsions, or suspensions. Its range of droplet control is from ½ to 200 microns. TIFA can be employed on garbage and fill dumps, in sewers, thickly populated areas, over swamps, and in recreation centers.

Playground Equipment Of Durable Materials

843 Strongly constructed with durable materials, Burke playground equipment provides easy, low-cost maintenance. Among the products available are climbing structures, swings, slides, see-saws, merry-go-rounds, turning bars, and horizontal ladders. For catalog, write to Dept. K, The J. E. Burke Co., Fond du lac, Wis.

Street-Lighting Poles

844 Bright uniform visibility is given at night by Monotube street-lighting poles and modern lighting equipment. Standard ranges of pole size, gauge, height, bracket arms, and accessories meet every modern street-lighting need economically and efficiently. Further information can be obtained from The Union Metal Mfg. Co., Canton 5, Ohio.

How to Cut Costs On Pumping Stations

845 Savings on space and construction costs can be achieved when building pumping stations, if you use the Byron Jackson vertical circulating pump, building the station in three stories. The first floor will hold the motors; the second, the discharge piping; the basement, the pumping units. Write to Byron Jackson Co., P. O. Box 2017 Terminal Annex, Los Angeles 54, Calif., for details on this money-saving design.

All-Wheel Drive Graders

846 The Austin-Western Co., Aurora, Ill., has prepared an illustrated catalog on its all-wheel drive and all-wheel steer graders. Builders of road machinery since 1859, the company states that the machine's all-wheel drive makes it easy for the front truck to ride the bank, and the all-wheel steer keeps the rear truck running smoothly down on the road, thus allowing it to do many difficult grading operations.

Fluid-Driven Street Sweeper

847 High-speed sweeping all year 'round can be achieved with the use of the Lull fluid-driven Super sweeper. Application of the Lull fluid drive means no universal joints, no complicated gear and shaft mechanism driving broom, and its provides flexibility and high efficiency under all operating conditions. Lull finger-tip power hydraulic controls regulate broom height, angle settings, and broom-rotation speed. The Lull Mfg. Co., 3612 E. 44th St., Minneapolis 6, Minn., on request will send a copy of its new *Lull Sweeper Bulletin AD40*.

Two-Way Radio Telephone For Airport Use

848 The NEL-200 Utiliphone is a completely new type of two-way VHF radio telephone. It is manufactured by National Electronics Laboratories, Inc., Alexandria, Va., which reports that it is the only equipment produced whose primary purpose is to provide communication between an airport control tower and ground units, such as snow plows, crash or fire trucks, automobiles, or any other ground mobile equipment.

Water Pumping Problems?

849 The Peerless Pump Division of the Food Machinery and Chemical Corp., Los Angeles 31, Calif., and Indianapolis 8, Ind., will be glad to help municipal officials solve them. The company is ready to supply pumps for 100,000,000 mgd as it did for the City of New York, or for pumps to dispose of sewage at 6,000 gpm as for the City of Manhattan Beach, Calif. Individual bulletins on the type of Peerless pump you require for your pumping problem may be obtained from the manufacturer.

Simplified Bookkeeping

850 Simplified bookkeeping can be achieved with the use of Recordak Microfilm, produced by the Recordak Corp., subsidiary of the Eastman Kodak Co., 444 Madison Ave., New York 22, N. Y. According to the manufacturer, 99 million ledger sheets are eliminated by microfilming punched-card listings. Write for a free copy of *50 Billion Records Can't Be Wrong*, which cites typical short cuts made possible by this method and gives details on a complete line of Recordak Microfilmers.

Loaders for Every Truck And for Every Purpose

851 Loaders for every truck and for every purpose are manufactured by Ray-Lind, Inc., Iron River, Mich. The Model ML 25 mechanical gravity swing loader takes small space, and has a telescopic mast, cable-clutch control, and a positive ratchet brake.

For Ice, Snow Removal

852 The Tarrant Mfg. Co., East Ave., Saratoga Springs, N. Y., will supply literature or a demonstration on its stainless steel Scotchman spreader and straight de-icing salts. For use on any truck or pickup, the machine has a weather-proofed engine, electric starter, and uses either bagged or bulk salt. It keeps drainage open and provides bare-safe pavements.

Parking Lines At Walking Speed

853 The Florline makes street, safety, parking lines at walking speed. Manufactured by the H. C. Sweet Co., 12063 Woodbine Ave., Detroit 28, Mich., it makes curved, straight, continuous or skip lines 2, 3, or 4 inches wide with interchangeable carriages. The device hold 1½ gallons of paint, lacquer, or whitewash. Portable, efficient, and speedy, it cannot spill and is easy to clean, transport, and store.

Rubber Roads

854 "As soon as current shortages are overcome, rubber roads may well be the answer to saving millions for the taxpayers for the future," stated Warren S. Lockwood, director, Natural Rubber Bureau, 1631 K St., NW., Washington 6, D. C., as the Bureau released the 1951 edition of its booklet, *Stretching Highway Dollars with Rubber Roads*. Described are two years of tests which underscore the future potential of rubber roads in this country. Advantages forecast include: elasticity added to the asphalt and susceptibility to temperature variation is reduced; pavement is less brittle at low temperature, less soft at high; effect of shock and vibration is minimized, and ice film forms at lower temperature, and cars stop shorter with less skidding.

Parking Meters

855 The Karpark Corp., Cincinnati 6, Ohio, makes a parking meter to suit the special needs of every city. Available are: the Superior, with its steel head and resistance to damage and vandalism; Husky, a low-cost device, dependable at a minimum investment; Twin-O-Matic, and the Unimatic.

Fire Apparatus

856 The Mack Mfg. Corp., Fire Apparatus Division, Long Island City 1, N. Y., will furnish information on its fire apparatus, which include triple combination pumpers from 500 to 1,500 gallons; squad and hose cars; aerial; city service, and quadruple combination ladder trucks. Among the equipment's features are one-man jam-proof all-hydraulic controls.

Pipe Pusher Eliminates Torn Pavements

857 The Greenlee pipe pusher quickly and simply installs underground pipe without tearing up pavements, floors, or lawns. It eliminates extensive ditching and tedious backfilling. Available are two models and a special power pump to fit various jobs. Full details will be supplied by the Greenlee Tool Co., 2028 Columbia Ave., Rockford, Ill.

Emergency Pipe Clamp

858 An emergency pipe clamp, manufactured by the M. B. Skinner Co., South Bend 21, Ind., provides the answer to the present critical shortage of pipe. These clamps are employed for repairing corrosion leaks and splits in services, as well as mains, and are available for all sizes of steel and cast iron pipe from ½ to 12 inches.

Automatic Voting Machines Reduce Election Costs

859 Automatic voting machines will reduce election costs in your city. Automatic Voting Machine Corp., Jamestown 55, N. Y., reports that in 1946 Ypsilanti, Mich., using the old paper ballot systems, cast 5,326 votes at an average cost per vote of 28.4 cents. At its Nov. 7, 1950 election, using Automatic voting machines, the city cast 5,418 votes at an average cost per vote of 13.2 cents. Write the company for complete information.

Brake Testers

860 The Weaver Mfg. Co., 2160 9th St., Springfield, Ill., on request will furnish a copy of its pamphlet on Safety Lane Equipment, which lists automatic brake testers, indication of percentage of equalization of each wheel, and ability for car to drive on from either direction. The Weaver brake tester weighs the braking effort of each wheel with a spring scale.

Water Valves Designed For Rugged Service

861 R-S 50-pound iron valves are designed for rugged hydraulic service with a large safety factor for line stresses, water hammer, and other abuses. According to the manufacturer, R-S Products Corp., Wayne Junction, Philadelphia 44, Pa., its equipment provides excellent results in circulating water lines for condenser service and other applications in power plants, processing industries, and utilities. All are described in the company's *Catalog No. 18*.

Concrete Pavement Design

862 *Concrete Pavement Design* is the title of a free booklet offered by the Portland Cement Association, Dept. A8-4, 33 W. Grand Ave., Chicago 10, Ill. The Association states that concrete's advantages are: that it is safer because it reflects the most light, increasing visibility at night; concrete's gritty texture, night or day, wet or dry, affords a uniformly high skid resistance; it reduces street-light costs because of its high light reflectance, and it requires less maintenance than other products.

(Please Turn to Page 30 for More Literature)

Can your municipality afford to accept a lesser quality?

Specify Blackinton

finest in badges

Few municipalities, today, can afford to purchase unwisely with budgets being squeezed tighter and tighter by increased costs. Therefore, it will pay you to think carefully before placing your next badge order. Ask your supplier for BLACKINTON BADGES and be sure of the finest in badge quality. Check these five points and convince yourself that Blackinton is the best badge buy.

(1) Expert Die Work
(2) Precise Lettering
(3) Long Lasting Mirror Finish
(4) Smooth Hard Enamel
(5) Custom Design Service

BLACKINTON
C. H. BLACKINTON & CO., INC. ATTLEBORO FALLS, MASS.

***BADGES** for Police, Fire, Town, City, County and State Officials; also Civilian Defense, Plant Protection, and Junior Police.*

Catalogs for You

Write directly to the manufacturers, or use coupon on page 25

Triple Action Provided By Fire Extinguisher

863 The Type SG-48 Rockwood WaterFOG nozzle with extension applicators provides triple action—giving a straight stream, as well as high velocity and low velocity WaterFOG. These nozzles will extinguish or control fires in both ordinary combustibles and flammable liquids faster and with less water. They are available in ¾, 1, 1½, and 2½-inch sizes. Write to Rockwood Sprinkler Co., 38 Harlow St., Worchester 5, Mass., for descriptive literature.

A Cartoon Story Of Sanitary Landfill

864 *A Look to the Future With Sanitary Landfill* is the title of a new 16-page booklet issued by the Caterpillar Tractor Co., Peoria 8, Ill. By the use of comic-type cartoons, it describes the sanitary landfill method of refuse and garbage disposal.

Parking Meter Performance

865 Performance in parking meters pays off in the increased number of cities using them. When a city has an opportunity to compare, it takes a meter that looks attractive, is simple and dependable in operation. The Rhodes, manual-type meter meets these specifications. Write to M. H. Rhodes, Inc., Hartford, Conn., for literature describing its Mark-Time meter.

Power Sewer Cleaner

866 The OK Champion power sewer cleaner has twin rigs to take debris from sewer to street in one operation. The machine is mounted on four-wheeled trucks for easy towing. Built-in gear reduction ratio allows better use of power for bucket travel. Further information will be supplied by the Champion Corp., 4716 Sheffield Ave., Hammond, Ind.

Plows for Snow Removal

867 Reversible light-duty and heavy-duty snow plows, and trip-one-way snow plows are described in a catalog issued by the Walsh Holyoke Boiler Works, a Division of Continental Copper and Steel Industries, Inc., Holyoke, Mass. The light-duty machine is for 1½ and 2-ton trucks; and the heavy-duty snow plow for trucks of 2½ tons and over.

Clarifiers

868 Dorr Sifeed Clarifiers can give sewage purification results that should satisfy every sanitary engineer. In 18 typical plants built within recent years, the operators have been able to get suspended solids removals varying from 46 to 82%. One plant, in operation for four years, has been able to show a 72% reduction in suspended solids with only a one-hour detention period. If you are studying sewage plant improvements in your city, get facts from the Dorr Co., Stamford, Conn., showing how these Sifeed Clarifiers perform.

Power-Operated Lubricated Plug Valves

869 A colorful manual listing piping, wiring, mounting, and installation data for power-operated Nordstrom lubricated plug valves has been issued by the Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa. According to the company, this publication is the first complete compilation of technical data covering the use of pneumatic, hydraulic, and electric operators for lubricated plug valves.

(See page 32 for more bulletins)

REPORTS:

BATTERY AD-X2* EXTENDS BATTERY LIFE EXPECTANCY 12 TO 18 MONTHS BEYOND NORMAL

Extends the life expectancy of mechanically sound lead-acid batteries.
Initial treatment with "Battery AD-X2" good for life of battery.
Apply only to Mechanically Sound Batteries.
Satisfaction GUARANTEED provided instructions on use of "Battery AD-X2" are followed.

USES IN 104 POLICE CARS – Radio, lights and heater, plus long idling periods, put severe strains on police car batteries, but R. B. Lohry, Engineer in Charge, Radio Division, City of Oakland, who has been using Battery AD-X2 since 1947, writes: "In batteries used in Radio Police Vehicles subjected to hard usage and treated with Battery AD-X2, we have observed that the life expectancy was extended from 12 to 18 months beyond normal even though the batteries were not new at the time of treatment."

BUS LINE REDUCES ROAD FAILURES – John Foraker, Supt. of Transportation, City of Vallejo Bus Lines, with 30 Reo busses in service, reports: "Battery AD-X2 Re-Processed Batteries, which we use for replacements, are about 15% lower in original cost, and have at least twice the life expectancy. We also treat all new batteries with Battery AD-X2 to prevent sulfation." This has greatly reduced road trouble, mostly caused by battery failure.

SAVES 50% – Ray D. Smith, owner Bay Equipment Co., Richmond, Calif., user since 1947, with over 250 batteries in service, writes (3/19/51): "We have adopted the Battery AD-X2 Service System in its entirety; treating all new batteries and giving them an equalizing charge prior to installation; treating all mechanically sound batteries that are six months old or less in composition cases and one year old or less in hard rubber cases. This program has saved us well over 50% on our annual battery cost and has greatly reduced equipment downtime. For the first time in our existence, we have really learned to appreciate a non-prorated guarantee on our batteries."

You, too, can make savings like these with Battery AD-X2. Why delay? Get Battery AD-X2 TODAY. Treatment for Group 1 and 2 batteries, $3.00. Or use our Re-Processed Batteries. Money-back guarantee. Write, wire or phone NOW for price list, quantity discounts and address of nearest distributor.

Still some territories, State and local, open to qualified operators.

PIONEERS, INC.

2411 GROVE ST. OAKLAND 12, CALIF.
TWINOAKS 3-6044

In use continuously since 1947, keeping lead acid batteries stronger longer. 7

KENNEDY A.W.W.A. GATE VALVES

JOB-FITTED

...for a wide range of water works requirements

KENNEDY Fig. 56, A.W.W.A. Standard Double-Disc Gate Valve.

Every KENNEDY A.W.W.A. valve is JOB-FITTED...specially designed and engineered for the job it has to do. Conforming to A.W.W.A. standards in every detail, these Kennedy valves offer many extra-value features . . . one being the iron itself, which is 50% stronger than ordinary cast-iron . . . to keep them on the job year in and year out.

KENNEDY manufactures a most complete line of water works valves . . . in sizes from 2" to 60" . . . non-rising stem and outside-screw-and-yoke types . . . with a wide variety of gearing arrangements, controls, accessories and end connections available.

Standardize your community on KENNEDY valves . . . and fire hydrants . . . and you get dependable, trouble-free service that means greater economy and protection for decades ahead!

WRITE FOR BULLETIN 106

THE KENNEDY VALVE MFG. CO. • ELMIRA, N.Y.

Est. 1877

VALVES • PIPE FITTINGS • FIRE HYDRANTS

Other Catalogs

Write directly to the manufacturers, or use coupon on page 25

Street-Sweeping Machine Cleans at Lower Cost

870 The Mobil-Sweeper means cleaner streets at lower cost, and the Conveyer Co., 3260 E. Slauson Ave., Los Angeles 58, Calif., will be glad to send you a catalog on its equipment. This machine has a 200-gallon water tank. Its special "decreased arc" type gutter broom segments retain their flipping action longer, giving extra miles of clean sweeping.

Sewage Pumps Don't Dare Fail

871 And you don't need to worry about their failing if you use the Worthington vertical Mixflo sewage pumps. You get a wide choice of sizes. Find out how much more worth there is in a Worthington, says the manufacturer. Write to the Public Works Division, Worthington Pump and Machinery Corp., Harrison, N. J., for help with your sewage pumping problems.

Several Types Of Street Surfacing

872 Texaco Cutback Asphalts offer municipal officials several types of street surfacing which combine low cost with excellent performance under the kind of traffic served by a city's secondary streets. An inexpensive aggregate available locally can be mixed in a plant with one of the Texaco Cutback Asphalts. The mix is trucked to the street and spread by a power grader or mechanical paver to the desired thickness, then compacted. The Texas Co., Asphalt Sales Dept., 135 E. 42nd St., New York 17, N. Y., will report on other types of street surfacing, if requested.

Weighing Feeder

873 The Omega Machine Co., 345 Harris Ave., Providence 1, R. I., has announced a bulletin on its new Chemizer-Belt Gravimetric (Weighing) Feeder listed in *Bulletin No. 35-H5*. The 4-page publication describes the Model 50-8 for water and sewage works.

Portable Road Roller

874 A four-color catalog, No. 350, presenting its new model portable roller, is available from The Galion Iron Works and Mfg. Co., Galion, Ohio. Given are complete specifications, detailed description and photographs of construction and operation features, some of which are: hydraulic steering, constant-mesh transmission, spur-gear final drive, variable-weight compression roll, and towing hitch with built-in hydraulic jack.

Self-Propelled Mower For Lawns or Weeds

875 The J. A. Orr Co., 10019 S. Western Ave., Chicago 43, Ill., on request will send a pamphlet describing its "OK" mower for lawns or weeds. The self-propelled model, with an adjustable handle, has a 21-inch blade which cuts wider than the wheels.

Two-in-One Fire Fighter

876 The versatile John Bean two-in-one fire fighter gives high pressure fog and volume at the same time, states the John Bean Division of the Food Machinery and Chemical Corp. The Bean high pressure fog unit carries its own high pressure water supply. Available are machines with 500, 600 and 750 gpm capacities which can be mounted on most standard truck chassis. Full details will be furnished by the John Bean Division, Dept. 129, Lansing 4, Mich., or the western office, John Bean Division, 401 Main St., San Jose, Calif.

(See page 34 for more bulletins)

FULL WEIGHT - - - FIRST QUALITY

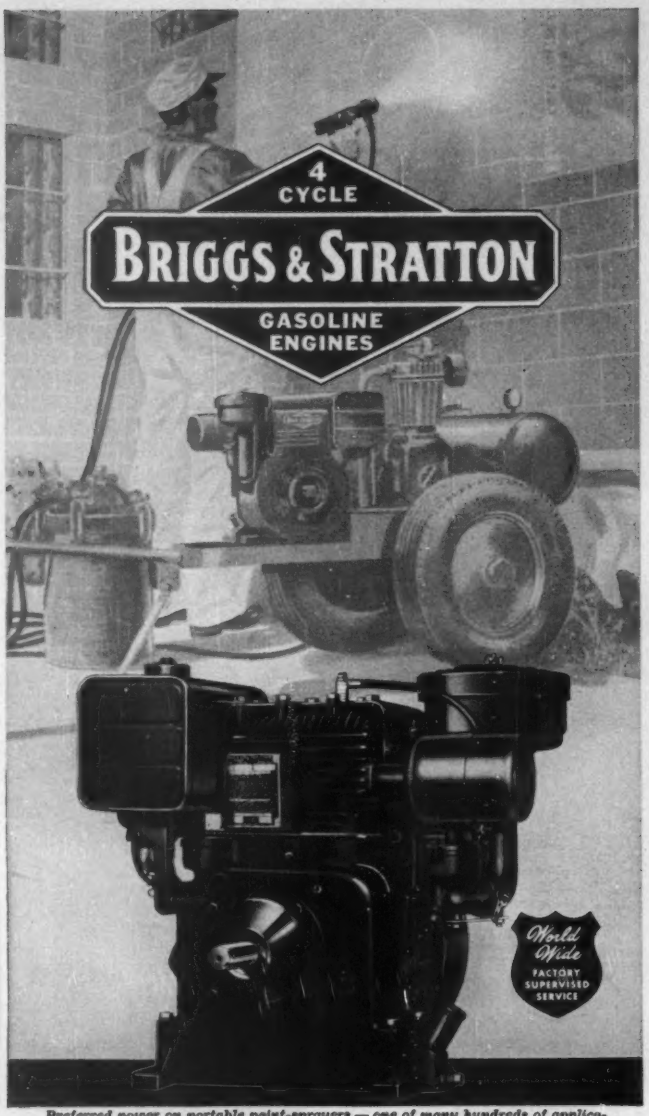
All McDonald water works brass is 85-5-5-5, according to water works standards. Here is our new Copper to Copper Stop and Drain, E-3519. Its full-sized, free water-way, backed by McDonald workmanship assure trouble-free operation. Sizes ⅜, ½, ¾, 1 inch.

We will be glad to mail on request, literature covering our full line of Brass Goods. A. Y. McDonald Mfg. Co., Dubuque, Iowa

EST. 1856

McDonald

BRASS GOODS • PUMPS • OIL EQUIPMENTS



Preferred power on portable paint-sprayers — one of many hundreds of applications on machines, tools, appliances for industry, construction, railroads, oil-fields, and on equipment and appliances for farm and home.

THE sure way to get the best in air-cooled power — insist on Briggs & Stratton, the recognized leader. No other single-cylinder, 4-cycle, air-cooled engines are so universally preferred by manufacturers, dealers and users alike.

Briggs & Stratton Corporation,
Milwaukee 1, Wisconsin, U. S. A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

Catalogs for You

Write directly to the manufacturers, or use coupon on page 25

Fog System Produces Long or Short-Range Streams

877 The Barton Super Fog, standard equipment on all American Fire Apparatus fire engines, is a highly developed fog system producing both long and short-range fog streams at safe high pressures. An illustrated folder may be obtained by writing to The American Fire Apparatus Co., Division of American-Marsh Pumps, Inc., Battle Creek, Mich.

Post-Hole Diggers

878 "A size and speed for every need," is the claim of the Roper Mfg. Co., of Zanesville, Ohio, in announcing its line of Roper post-hole diggers. The Roper is so constructed that the gear-drive runs in an oil bath, and the rotating digger shaft is completely encased in a cast-steel housing with bearings at three points.

Lawn Seed

879 On request, The Dickinson Co., 2764 W. 35th St., Chicago 32, Ill., will send complete information on its lawn seed which has been blended according to formulas that have been tested and improved throughout the years. The manufacturer's product is in use in parks and on public grounds throughout the nation.

Upsweep Street Lighting Brackets

880 The Hubbard upsweep street lighting brackets can be attached to wood poles with 3 lag screws or crossarm bolt and lag screws; their design permits high luminaire elevation in threaded or slip-fitter style; the "free-flowing" internal wiring, beveled pipe ends, without sharp bends, or obstructions, permit one-man installation. Further information may be obtained from Hubbard & Co. of Pittsburgh, Chicago, and Oakland, Calif.

Road Maintainer

881 More versatility and power are provided by the Huber road maintainer produced by the Huber Mfg. Co., Marion, Ohio. Hydraulic attachments include bulldozer, mower, lift loader, patch roller, berm leveler, road planer, broom, and snowplow.

Rehabilitate Water System With These Valves and Sleeves

882 Iowa mechanical joint cutting-in valves and sleeves will rehabilitate water systems, reports the Iowa Valve Co., 201-299 N. Talman Ave., Chicago 80, Ill., subsidiary of James B. Clow & Sons. It is a fast, simple, and economical method of cutting valves into existing water lines. Furnished complete with joint accessories, no lead, jute or caulking are needed.

Speeds Garbage Disposal By Sanitary Fill

883 The rubber-tired Tournadozer speeds garbage disposal. It spreads, compacts, and covers garbage with a 1-man, 1-machine operation. The equipment, manufactured by R. G. LaTourneau, Inc., Peoria, Ill., excavates disposal trenches, spreads truck-dumped garbage, its giant tires compact refuse into minimum space, and big blade spreads dirt in even layers. Write the company for details on the 122-hp Model D Tournadozer or the 186-hp Model C and state what its use will be for your municipality.

(See p. 207 for more bulletins)

Progressive Communities are Joining the Trend to

Hotpoint's

Municipal Plan of Food-Waste Disposal

The Hotpoint Disposall® food-waste disposer is easy to install in any sink . . . convenient . . . safe . . . odorless and economical. Simple to operate . . . keeps kitchens, sinks and hands clean. Does not overload or clog sewer systems. Can also be used with septic tank.

If you would like to provide your community with a modern, sanitary and economical way of disposing of garbage, the Hotpoint Municipal Plan is the answer. All over the country, progressive municipal officials are dispensing with the old-fashioned, odorous, costly and unsightly "can and wagon" garbage collection system. The modern trend is to Hotpoint Disposalls.

The Hotpoint Municipal Plan provides a program by which your entire community can enjoy complete elimination of all garbage disposal problems. The Hotpoint Plan is based on documented experience and written specifically for municipal officials. A request from you will bring the complete story on how you can provide—

- **A convenient, new and modern food-waste removal system.**
- **Health protection to the members of all families.**
- **Fly and rat pest reduction.**
- **Garbage collection cost reduction.**
- **More digester gas for use and sale.**
- **More digested sludge for fertilizer.**
- **Elimination of food-waste before it becomes garbage.**
- **Elimination of alley garbage can.**
- **Elimination of garbage collection problems.**
- **Elimination of garbage odors.**
- **True sanitation for your town.**

And . . . it saves you money!

Write to Hotpoint Disposall Dept.
5600 West Taylor St., Chicago 44, Illinois, for all the facts

Hotpoint Inc.

(A General Electric Affiliate)
5600 West Taylor Street, Chicago 44, Illinois

CUT DIGGING COSTS

with the

new Sherman Power Digger

Patented, actuated bucket gives you selective digging action, better loading, greater versatility.

All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

SPECIFICATIONS

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	.5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

Standard tractor mounting gives unmatched maneuverability and transportability.

•

Digs ditches, trenches, footings, culverts, basements and other excavations.

•

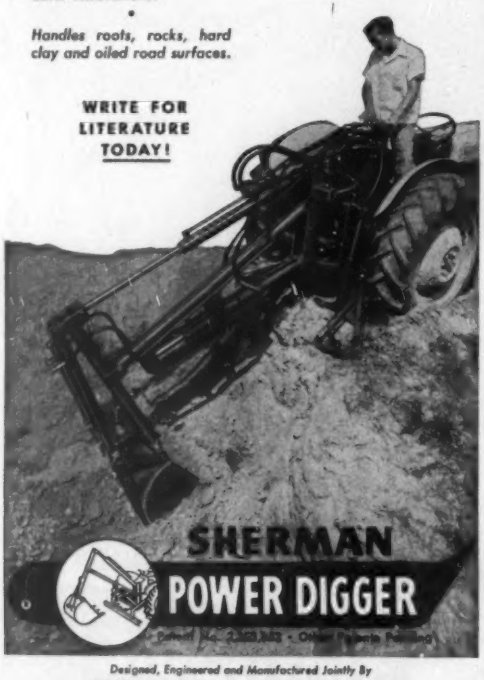
Handles roots, rocks, hard clay and oiled road surfaces.

Works well behind the tractor at any angle.

•

Actuated bucket raises high enough to load standard dump truck.

WRITE FOR LITERATURE TODAY!



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Sold Exclusively By **SHERMAN PRODUCTS, INC.**

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ADJUSTABLE VALVE BOXES

At the left is shown our **3-piece screw type** valve box, designed for modern-day street traffic. Below: Our **2-piece extra heavy sliding type** valve box, designed to cover the stuffing box and to slide instead of rotate, is meeting favor with water companies throughout the country.

3-piece Screw Type 5¼" Shaft

5¼" Valve Box (3-piece Screw Type) Extension:

AAA—17" Stationary length
AA—1'10" to 2'4"
A—2'4" to 3'4"
B—3' to 4'
C—3'6" to 4'6"
CC—4' to 5'
D—3'6" to 5'6"
E—4' to 6'
F—5' to 7'
G—6' to 8'

(2-piece Sliding Type) Extension:

5562-S—2' to 3'
5564-S—3' to 4'
5662-S—2'6" to 4'
5669-S—3' to 5'

2-piece Sliding Type 5¼" Shaft

EXTENSION SERVICE BOXES

2½-inch Shaft

89-A—1' to 1'8"
90-B—1'6" to 2'2"
91-C—1'9" to 2'9"
92-C—2' to 3'2"
92-D—2' to 3'6"
93-D—3' to 4'
93-E—3' to 4'6"
94-D—3'6" to 4'9"
94-E—3'6" to 5'
95-E—4' to 5'6"
100-E—4'6" to 6'
100-F—4'6" to 6'6"

2½ and 3-inch Shaft

3-inch Shaft Extension:

1½—1'6" to 2'4"
2—2' to 3'3"
3—2'8" to 4'
4—3'10" to 4'10"
5—3'8" to 5'6"
7—4' to 6'

2½" Shaft

Besides these boxes we manufacture a great many other patterns and are continually adding new designs to take care of special problems in the water and gas field.

Write for Circular

BUFFALO PIPE & FOUNDRY CORPORATION
Box 55, Station B, Buffalo 7, N. Y.

Send for your new

griductor®

bulletin 5100-A

NEW FACTS ON BETTER SOLIDS REDUCTION

Straight channel sewage screening and cutting with the Griductor is proving itself all over the nation. Now here is new data on:

1 Griductor intermittent cutting and shearing.
2 Installation methods.
3 Specifications, dimensions, capacities.

- *** MORE SETTLEABLE SOLIDS**
- *** MORE SLUDGE TO DIGESTER**
- *** INCREASED GAS PRODUCTION**
- *** LESS CLOGGING OF TREATMENT UNITS**

Send Now for Griductor Bulletin 5100-A

INFILCO
* BETTER WATER CONDITIONING * AND WASTE TREATMENT SINCE 1894

INFILCO INCORPORATED | *Tucson, Arizona*

FIELD ENGINEERING OFFICES IN 26 PRINCIPAL CITIES

World's Leading Manufacturers of Water Conditioning and Waste-Treating Equipment

Worth its weight

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

. . . in installation savings

Are you finding it increasingly difficult, in the face of today's economy, to undertake needed water-line construction?

If so, you may find—as other planners do—that "Transite" Pressure Pipe can help provide a practical answer to your problem. For this pipe, in addition to its continuing, long-term savings, offers an opportunity for economies in installation *that may go far in helping you contend with rising costs and manpower shortages.*

Transite Pressure Pipe offers a combination of advantages which speed and facilitate water main installations all along the line—from the time the pipe is first received, to final placement of the line in service and restoration of normal street traffic. Not only do pipe laying crews find this modern pipe easy to work with, but its unique features make for a more compact, efficient and economical operation in virtually all the construction phases of water-line extension projects.

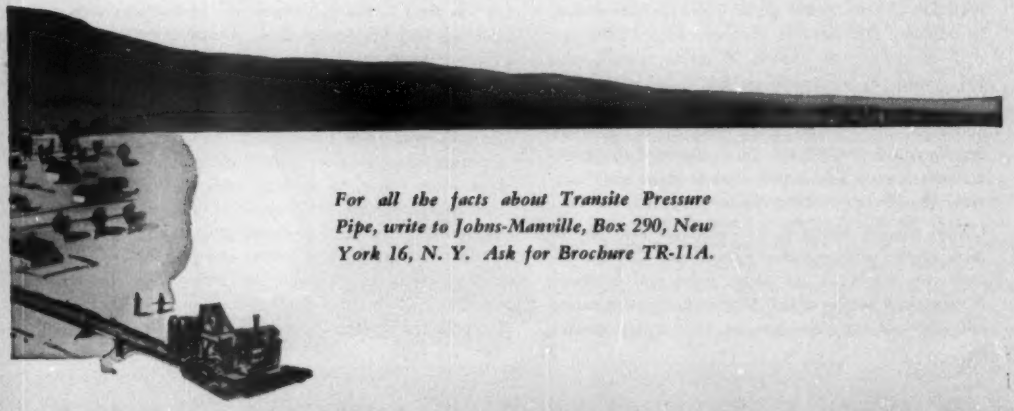
Economies start as soon as a shipment of Transite Pipe is received. Because it is light in weight, unloading and other handling operations are simplified. More footage can be carried per truckload, trucking costs are lowered, and distribution on the job site is faster. And except for the larger diameters of pipe, the sections can be lowered into the trench by hand, or with the aid of rope slings.

Assembly, too, is both rapid and economical. The flexibility of Transite's joints permit the pipe to be laid around wide curves without the need for special fittings. The Simplex Couplings require no calking or hot compounds; they are quickly and easily assembled to provide lastingly tight joints. *And with this pipe you can check for proper assembly immediately after the pipe ends are joined.*

Makes pipe-laying an assembly-line operation

This combined feature of rapid assembly and assurance of joint-tightness as fast as the line is laid, is the key to an important Transite advantage: it means that trench excavation, pipe laying, and backfilling operations can follow in quick succession—often under the supervision of one foreman. It makes pipe-laying virtually an assembly-line operation in which the trench can be closed in a minimum of time. This assures more economical use of excavation and earth handling equipment, reduces the expense and hazards of long stretches of open trench, and helps button-up the job with the least possible expenditure of time, labor and money.

These *initial* savings . . . plus the *long term* economies that have been effected in thousands of installations . . . are two good reasons why you should have the complete story about this modern asbestos-cement pipe developed and produced by Johns-Manville to carry water more efficiently and more economically.



For all the facts about Transite Pressure Pipe, write to Johns-Manville, Box 290, New York 16, N. Y. Ask for Brochure TR-11A.

TRANSITE PRESSURE PIPE

Parsons heavy-duty 221 Trenchliner

digs 8'-6" deep...16" to 36" wide

speeds city trenching at 3 cu. yds. per min.

With 30 digging feeds, from 6.5" to 165.9" per min., Parsons 221 Trenchliner assures maximum trench production at every digging level and in all kinds of materials . . . excavates up to 3 cu. yds. per minute. In addition, this versatile trencher has 3 bucket line and conveyor belt speeds, 4 travel speeds, plus full reverse of all operations for undercutting sidewalks, sewers, old mains, or making vertical set-ins. Telescopic, ladder-type boom locks at 18" intervals for digging to 8'-6" deep. Three standard size buckets with special side cutters and oversize teeth provide 12 different cutting widths from 16" to 36".

Off-set digging ability further increases flexibility to meet special problems of city trenching. 221 Trenchliner cuts within 10" of curbs, poles and buildings in streets and narrow alleys. Digging boom shifts across full width of machine, cuts as efficiently behind either crawler as it does in center position. Reversible, power-shift spoil conveyor gives controlled discharge on either side . . . shifts through machine in less than 1 minute, dodges side obstructions without swerving from grade line. Arc of conveyor provides constant 6'-4" discharge height, regardless of digging boom position, for loading into trucks . . . or gives low-level drop for close-to-trench deposit.

Extra-heavy-duty in every detail, from its self-cleaning tractor-type crawlers and all-welded, trussed, arch-type main frame, to its high carbon steel digging buckets, this Parsons 221 Trenchliner maintains steady, high-speed schedules . . . produces clean-cut, smooth-walled trenches fast, at lowest cost per foot. Contact your Parsons distributor for complete facts and figures . . . or send for catalogs on any of the 5 Trenchliner sizes in the modern Parsons line.

PARSONS Trenchliners

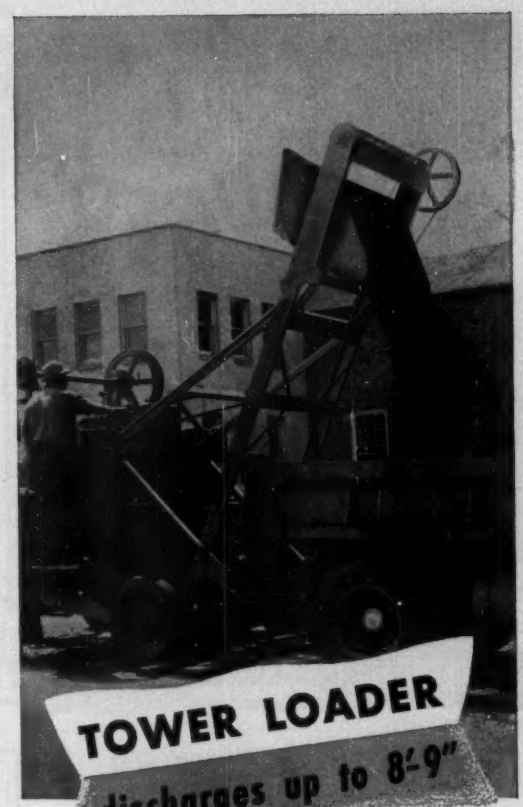
PARSONS COMPANY, NEWTON, IOWA Koehring Subsidiary

10 or 25-TON Lift Service

...WITH KOEHRING 35 M. P. H. TRUCK CRANES . . . . . .

On scattered lifting jobs requiring frequent moves, you can get extra load capacities, reach and extra speed with Koehring Truck Cranes. Model 304 safely lifts 50,000 lbs. . . . 11.1 tons more than its crawler rating. Extra stability of truck crane mounting increases boom reach from 75′ to a maximum 110′. Koehring 205 Truck Crane (below), with its 20,000 lb. lift on rubber, increases load capacity almost one-half. Maximum boom length is stepped up from 50′ to 85′. These mobile Truck Cranes roll along at 30 to 35 m.p.h. . . . no waiting for trailer, no planking. Hinged booms fold back for ample clearance . . . saves more time every move.

Koehring 304 is also available on rubber-tired cruiser mounting. Other Koehring Crane sizes include 36-ton 605, and big 79½-ton 1005. For more information, see your Koehring Distributor, or write to us.



TOWER LOADER discharges up to 8′-9″

...WITH KWIK-MIX BITUMINOUS MIXERS...

Now you can discharge bituminous mix into trucks, overhead hoppers, or stockpile with Kwik-Mix Tower Loader attachment. Available for both Kwik-Mix 10 and 14 cu. ft. Bituminous Mixers, it provides 7′-9″ to 8′-9″ discharge height . . . saves time and cost of overhead mixer installations on many jobs. Big bucket holds full mixer batch, is raised by power, dumps automatically at top of tower. Bucket travel and discharge are completed while next batch is being mixed . . . no delay to mixer production. It is single lever controlled by mixer operator . . . mixer engine supplies the power. Tower Loader is quickly collapsed for ample travel clearance . . . is also available on Kwik-Mix 16-S and 11-S Dandie® Concrete Mixers for 9′-2″ overhead discharge. Ask your Kwik-Mix distributor for the facts, or write us. Also check Kwik-Mix line of bituminous, concrete, plaster-mortar mixers, and power wheelbarrow.

KOEHRING *Cranes*

KOEHRING COMPANY, MILWAUKEE 16, WIS.
Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

KWIK-MIX *Mixers*

KWIK-MIX COMPANY, PORT WASHINGTON, WIS.
Koehring Subsidiary

SAVES $ LOTS OF $

. . . an pipe runs under streets, highways, pavement, gardens, etc.

REG. U. S. PAT. OFF.

HYDRAUGER*

HY-25C

OPEN HOLE

AVOID TIME WASTE

Hydrauger is a modern, time-saving way to install underground pipe . . . avoids trenching, backfilling, pavement cutting, etc.

2" to 24" BITS and REAMERS

HYDRAUGER CORP. Ltd.
681 Market Street
San Francisco, California

*Earth Boring Tool

ASK FOR BOOKLET . . . NO OBLIGATION

WITH A WILKINSON LINE LOCATOR

You DON'T have to GUESS

WILKINSON LINE LOCATOR

the original light-weight, compact, precision locator — is POWERFUL.

It locates every part of your underground pipe system, however deep and shows the depth of lines.

It's FAST, EXACT, SIMPLE.

Avoid expensive damage to subsurface structures by power trenching machines with the Wilkinson Line Locator, the electronic sleuth.

To Spot Your
- MAINS
- SERVICES
- STUBS
- VALVES
- BOXES
- COUPLINGS

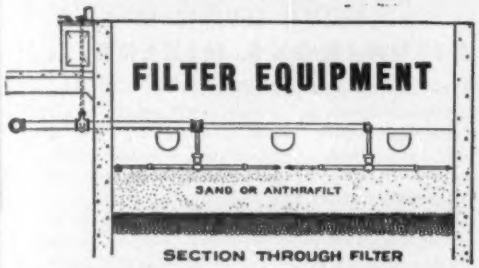
QUICK FAST EXACT

QUALITY IS ALWAYS CHEAPER

WILKINSON

PRODUCTS CO.
3987 CHEVY CHASE DR.
PASADENA 3, CALIF.

PALMER



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

- Requires an average of 40% less wash water
- Eliminates mud balls
- Prevents cracking and shrinking of the beds
- Produces "new" sand after short period of normal operation
- Enables you to increase filter runs up to 50%

Anthrafilt Advantages

- Doubles the length of filter runs attainable with sand and quartz media
- Requires one-half as much wash water
- Filters are out of service less because of the shorter wash cycle
- Coating, caking or balling with mud lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.
P. O. BOX 1655, ERIE, PA.

WORTHINGTON-GAMON

LIQUID METERS

All Sizes All Types

WORTHINGTON-GAMON METER DIVISION

Worthington Pump and Machinery Corp.
296 South Street Newark 5, New Jersey

EMERGENCY REPAIRS

Here are 6 safe, sure ways to repair *damaged lines quickly*

It is no more than prudent to be prepared to handle emergency damage quickly and effectively. Many cities are seeing to their stocks of the Dresser products illustrated here, knowing that even unskilled civil defense volunteers can install them with a minimum of training. Resilient rubber gaskets provide lasting protection against vibration and shock.

Be sure you have complete information on these products and their use. See your Dresser Sales Engineer or write to our Bradford Office for details.

Dresser "Adjustable" Sleeve (Style 82) makes quick, permanent repairs on cast iron lines. Light in weight, low in cost. Adjustable for perfect fit. Sizes 4" to 8".

Dresser Split Sleeve (Style 57C) for repairing breaks, splits and holes in cast iron pipe. Ruggedly built. Sizes from 2" to 12".

Dresser Coupling (Style 38) makes it easy to cut in a new length of pipe to replace a damaged section. The only tool needed to install it is a wrench. Sizes ¾" to 72" and up.

Dresser "Bell-Pack" Sleeve (Style 126) encloses split and broken bells, mechanical joints. Factory assembled, ready to use. Sizes 3" to 24".

Dresser Bell-Joint Clamp (Style 60) makes permanent, flexible repair on blown or leaking bell and spigot joints. Fully adjustable. High uniform gasket pressure. Sizes 3" to 60".

Dresser "Super-Service Fittings" (Style 90) is extremely rugged joint for service lines. Flexible—withstands vibration and shock. Complete line including ells, tees, adaptors. Sizes from ¾" to 2".

DRESSER

COUPLINGS AND REPAIR PRODUCTS

Dresser Manufacturing Division, 59 Fisher Ave., Bradford, Pa. (One of the Dresser Industries)—Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, Cal.—Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco.

Gentlemen: Please send full information on Dresser Products for emergency repairs.

Name_____

Position_____

Address_____

City_____ Zone____ State_____

The List GROWS!

MORSE BOULGER
Mechanically Stoked Incinerator Plants

City of Los Angeles
100 ton unit for city refuse provision for second unit.
Engineers Greeley & Hansen, Chicago

Mayaguez, Puerto Rico
60 ton unit for city refuse.

Gloucester City, N. J.
60 ton unit for garbage and rubbish, with upper rotary hearth for sewage sludge.
Engineers Andrews & Gieseke, Philadelphia

The Atlantic Refining Co.
Point Breeze, Philadelphia
Large unit with waste heat recovery system for handling filter cake from waste water treating plant.

City of Saginaw, Mich.
Multiple hearth furnace for incineration of raw primary sewage sludge.
Engineers Hubbell, Roth & Clark, Detroit

Esso Standard Oil Co.
Baltimore, Md.
for handling tank bottoms, liquid wastes, and general refuse.

Marsh & Co., Inc.
South Danville, Pa.
4 different units, two multiple hearth units, one for general rubbish, and a waste solvent destructor.

Washington Suburban Sanitary Commission
Takoma Park, Md.
75 ton unit for garbage and rubbish.

Pomona, California
2 units totalling 225 tons for garbage and rubbish.
Engineers Black & Veatch, Kansas City, Missouri.

Lawrence, Mass.
2 units totalling 300 tons for garbage and rubbish.
Architects Ashton, Hunnewell & Pratt
Engineers Metcalf & Eddy

Gretna, Louisiana
2 units totalling 100 tons for garbage and rubbish.
Engineers: Alvin E. Howard and Carl Schneider

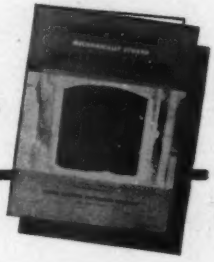
Hempstead, N. Y.
4 units totalling 672 tons for garbage, rubbish, etc. Will be largest mechanically stoked municipal incinerator in the United States. Includes waste heat boilers, dust collectors, and mechanical ash removal.
Engineer: Henry W. Tonle

Marsh & Co., Inc.
Rahway, N. J.
90 ton unit for general refuse.

*Currently, Morse Boulger Mechanically Stoked Incinerators for municipal refuse, sewage sludge, and industrial wastes, are being engineered for or are under construction in localities and plants listed at the left.**

Mechanically Stoked Incineration is the *modern* way to dispose of rubbish, garbage, sludges, wastes, etc., and it's practicable for any size community. Our engineers will be glad to help you and your consulting engineers draw up recommendations to meet your incineration requirements. To this important work, our engineers will bring nearly sixty years' experience in the design and construction of incinerators.

*An additional 79 communities use Morse Boulger Incinerators.



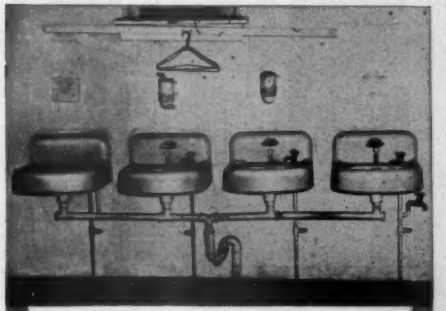
Send for Bulletin 111-A which gives details of the Morse Boulger Mechanically Stoked Incinerator.

MORSE BOULGER DESTRUCTOR CO.
205-R EAST 42nd ST. • NEW YORK 17, N. Y.
Representatives in Principal Cities

Look what remodeling can do for rest rooms . . . when you install AMERICAN-Standard plumbing fixtures

● These rest rooms in the Merchants and Manufacturers Building at the State Fair Grounds, Louisville, Ky., are excellent examples of old, unsanitary wash rooms which have been made modern, sanitary and attractive to patrons by the installation of beautiful, gleaming American-Standard plumbing fixtures.

And these same high quality fixtures can do the same job for your rest rooms. Whatever your requirements—whether your rest rooms have a light or heavy volume of traffic—you'll find in the complete American-Standard line exactly the right equipment for your installation. Ask your plumbing contractor for information about them and write for a free copy of our Better Rest Room Guide to **American Radiator & Standard Sanitary Corporation,** Dept. AC-9, Pittsburgh 30, Pa.



BEFORE

These before and after pictures of the men's room show what a vast difference remodeling with attractive American-Standard fixtures makes. Old lavatories have been replaced with handsome, splash back Lucerne lavatories, and in the adjoining room, Expello urinals have been installed. Both these fixtures are made of genuine vitreous china for long wear and easy cleaning, and are wall-hung to facilitate quick, efficient floor cleaning.

AFTER

SANISTAND URINAL FOR WOMEN

This view of the women's rest room shows the Sanistand fixture—the new American-Standard urinal for women. This new fixture, which is designed to offer women the same convenience and sanitation the standing urinal does men, is constructed entirely of easy-to-clean genuine vitreous china. Its variety of attractive colors blend or contrast with any scheme. The slanted rim, extended lip, ample bowl and outlet encourage cleanliness, make rest rooms easier to clean and keep clean. When used in modernization work, the Sanistand urinal can usually replace a water closet in the same compartment. It is available with either hand or foot operation and features the quiet, efficient siphon vortex flushing action with jet.

AMERICAN-Standard

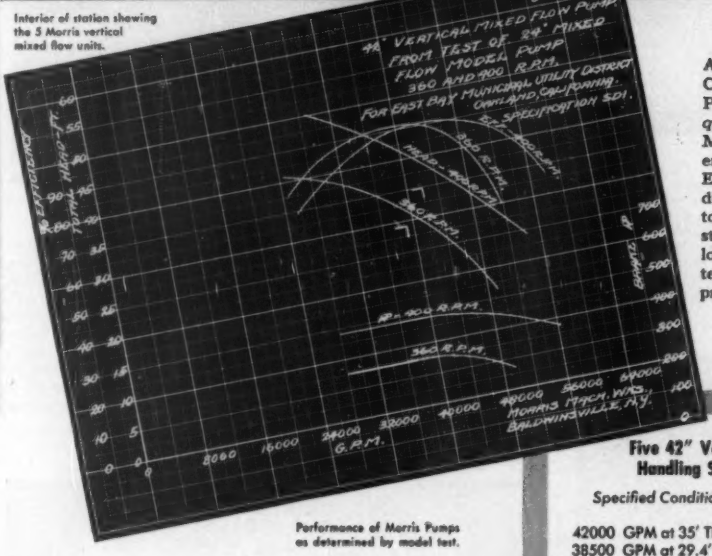
First in heating . . . first in plumbing

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

Again! MORRIS PUMPS for Quality and Performance

Interior of station showing the 5 Morris vertical mixed flow units.

five 42" Mixed Flow Units Installed in EAST BAY treatment Plant OAKLAND, CALIF.



Performance of Morris Pumps as determined by model test.

Again and again, municipalities from California to Maine specify Morris Pumps for two good reasons: *inbuilt quality and exceptional performance.* A Morris installation is the heart of a modern sewage plant.

Eighty-seven years' experience in hydraulic engineering, combined with up-to-the-minute design and rugged construction, explain the high efficiency . . . long wear . . . lower operating and maintenance costs . . . uninterrupted service provided by Morris Pumps.

Morris engineers are readily available for technical consultation — without cost or obligation. Write.

Five 42" Vertical Mixed Flow Pumps Handling Storm Water and Sewage

Specified Conditions	*Actual Performance by Model Test*
42000 GPM at 35' TDH	46000 GPM at 35' TDH
38500 GPM at 29.4' TDH	41000 GPM at 29.4' TDH

3 of these units each driven by 500 HP, 400 RPM, 4000-volt synchronous motors

2 units each driven by 2-speed synchronous motors, 500 HP at 400 RPM or 350 HP at 360 RPM

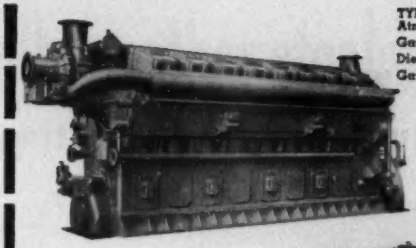
Overall Height 2-Speed Units — 18' 10"; Size Suction Opening — 42" dia.; Size Discharge Opening — 42" dia. Units entirely self-contained. All bearings force-feed oil lubricated. Extra-rigid motor support.

MORRIS MACHINE WORKS
Baldwinsville, N.Y.
Sales Offices in Principal Cities
MORRIS *Centrifugal Pumps*

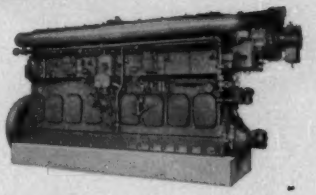
● Identified here are five of the most popular Cooper-Bessemer stationary engine types—in a power range from 290 to 3700 bhp. Not only does each type offer variety in the number of cylinders, but most are available as gas engines, gas-diesels or full diesels. Moreover each type comes either atmospheric or supercharged.

This gives you some idea of how well Cooper-Bessemer is prepared to meet your power requirements ideally — with the engine qualities that mean a whale of a lot in trouble-free service and especially in low over-all operating costs!

If your plans call for defense-supporting power, be sure to check with Cooper-Bessemer. Get all the facts on features that pay off for Cooper-Bessemer users time and time again.



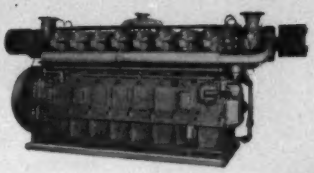
TYPE LSV.....12 or 16 cyl.
Atmospheric and Supercharged
Gas .....1440 to 3700 hp.
Diesel .....1650 to 3700 hp.
Gas-Diesel .....1650 to 3700 hp.



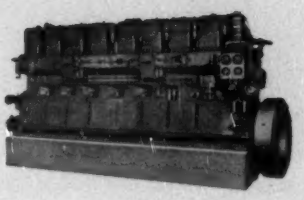
TYPE LS.....6, 7 or 8 cyl.
Atmospheric and Supercharged
Gas .....720 to 1850 hp.
Diesel .....825 to 1850 hp.
Gas-Diesel .....825 to 1850 hp.

WHEN IT COMES TO POWER...

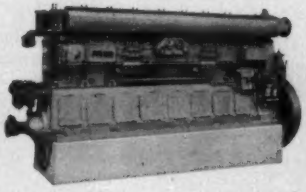
the better it "fits", the less it costs!



TYPE FV.....6, 8, 12 or 16 cyl.
Diesel—
Atmospheric .....280 to 1230 hp.
Diesel—
Supercharged .. 420 to 1850 hp.



TYPE JS .....5, 6, 7 or 8 cyl.
Atmospheric and Supercharged
Gas .....375 to 1500 hp.
Diesel .....430 to 1500 hp.
Gas-Diesel .....430 to 1500 hp



TYPE GS .....5, 8 or 8 cyl.
Atmospheric and Supercharged
Gas .....320 to 1200 hp.
Diesel .....300 to 1200 hp.
Gas-Diesel .....300 to 1200 hp.

The Cooper-Bessemer Corporation

MOUNT VERNON, OHIO — GROVE CITY, PENNA.

New York Washington, D. C. Bradford, Pa. San Francisco Houston, Dallas Greggton, Pampa and Odessa, Texas Seattle Tulsa Shreveport St. Louis Los Angeles Chicago Caracas, Venezuela Cooper-Bessemer of Canada, Ltd., Halifax, Nova Scotia Gloucester, Mass. Calmes Engineering Co., New Orleans, La.

Now—All Your Customer and General Accounting on One Machine!

The Sensational New

Burroughs Sensimatic

accounting machine

Yes, it is truly amazing the way the completely new Burroughs Sensimatic handles water works accounting jobs. And there's a good reason—for the Sensimatic was designed with the needs of water works in mind.

It's completely new from the ground up—built around a brand new principle, the control panel, or "mechanical brain," that directs the machine automatically through any four accounting applications, in any combination. Control panels are interchangeable instantly and there is no limit to the number that can be used—no limit to the number of accounting jobs a single machine can do!

The Sensimatic makes possible a great improvement in accounting speed, flexibility, and ease of operation. This means faster billing and posting, working-hours saved, increased output and reduced accounting expenses. The Sensimatic is moderately priced, too.

Get the complete story of this sensational new Sensimatic today. Call your local Burroughs office or write Burroughs Adding Machine Company, Detroit 32, Mich.

HANDLES ALL THESE JOBS—*and more*

Customer Billing • General Ledger • Budgetary Ledger
Payroll • Operating and Work Order Ledgers

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

CINCINNATI installs another steel water main

CITY USES STEEL PIPE FOR SIXTH TIME SINCE 1938

The accompanying photographs were taken recently during construction of the new Delta Avenue steel feeder main in Cincinnati. The new water line is approximately 8500 ft long, and consists of 48 in. i.d. Bethlehem Water Pipe, ½ in. thick, plus specials. The pipe sections were tar-enameled and wrapped on the outer surfaces, and were joined end-to-end by mechanical couplings. Crumley, Jones & Crumley, Cincinnati, were the installation contractors.

* * *

Bethlehem Tar-Enameled Water Pipe is the logical choice for water-distribution systems because it is durable, economical, and dependable. The pipe is resistant to incrustation and corrosion because it is adequately coated, inside and out, with a uniformly smooth layer of coal-tar enamel. It is readily installed in any type of terrain, and it can be bent readily to by-pass obstructions. Leak-proof girth seams can be obtained by any of three methods—welding, riveting, or the use of mechanical couplings.

Bethlehem Tar-Enameled Water Pipe comes in 40-ft lengths. It is made in all diameters from 22 in. i.d. up to the maximum permitted by common carriers.

If you would like more details about the advantages of Bethlehem Tar-Enameled Water Pipe, the nearest Bethlehem office will be pleased to give you complete information.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

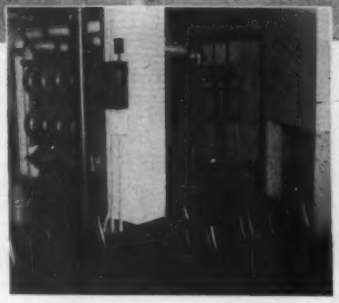
Easy does it! Bethlehem Tar-Enameled Water Pipe is slowly lowered into trench. Line was installed without disrupting traffic.

Unloading 40-ft length of Bethlehem Tar-Enameled Water Pipe from trailer.

Spaced at regular intervals, Bethlehem steel pipe awaits installation.

BETHLEHEM *Tar-Enameled* WATER PIPE

INCINERATORS TEAM UP WITH P.F.T. HEAT EXCHANGER TO HEAT SLUDGE



One of two P. F. T. No. 619 Heat Exchangers which have a designed heat transfer capacity of 2,300,000 B.t.u. per hour each, or a total of 4,600,000 B.t.u. per hour. The sludge piping is so arranged that heat may be applied to any one, or all, of the digesters simultaneously.

At Bird Island Sewage Treatment Works, Buffalo, N. Y.

Two P. F. T. No. 619 Heat Exchangers are installed in the digester control building which is located between the four P. F. T. 90-foot diameter floating cover digesters at the Bird Island Sewage Treatment Works, Buffalo, New York.

Raw sludge is preheated by passing through the sludge tubes of two P. F. T. No. 619 Heat Exchangers. It is inter-mixed with circulated digester liquor to inoculate the raw solids and to eliminate the discharge of cold material into the digesters. With the addition of this modern means of digester heating it is now possible to maintain uniform optimum temperature in all digesters. With high and variable loadings on these digesters, this was not possible with the original internal heating coils.

The hot water crculated through the heat exchangers is supplied from boilers and from the waste heat recovered from the sludge incinerators.

P. F. T. Gas Safety Equipment as described in Bulletin 221 is used throughout to assure safe utilization of the sewage sludge gas. P. F. T. Bulletin 235 gives complete details of P. F. T. Digester Heater and Heat Exchangers for external digester heating.

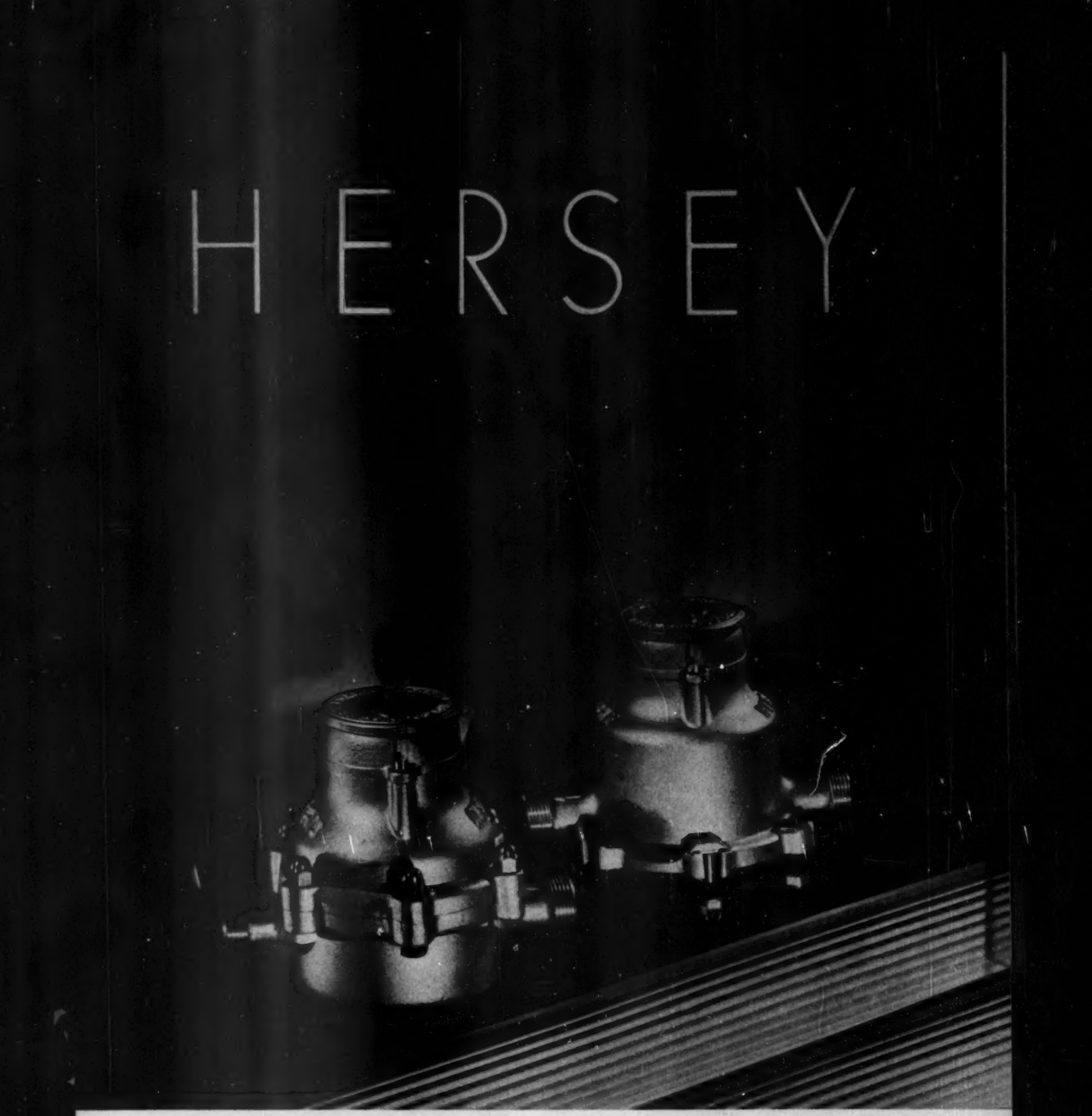
P.F.T. **PACIFIC FLUSH TANK CO.**

Waste Treatment Equipment Exclusively Since 1893

4241 RAVENSWOOD AVE. CHICAGO 13, ILLINOIS

NEW YORK • LOS ANGELES • SAN FRANCISCO • CHARLOTTE, N. C. • JACKSONVILLE • DENVER

HERSEY



HERSEY WATER METER POPULARITY

Is Greater Today Than Ever

REASON: The basic engineering design has never been equaled

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA — DALLAS — CHICAGO
SAN FRANCISCO — LOS ANGELES

Chief John Lee and Officer Hugh Poore are shown here using radio to talk to other units of the county patrol. They find that their G-E equipment withstands heavy vibration abuse over rough county backroads.

IN MARIETTA, GEORGIA—IT'S

...minal Taxi dispatcher George Fletcher ...eeps 5 cabs under radio control. Efficient ...se of cab mileage via radio dispatching ...an mean the difference between profit and ...oss for small fleet operator.

Marietta Fire Department, represented here by Chief Howard Schaffer (standing), relies on mobile G-E radio units installed in chief's car. For emergency coordination, Fire Department and Police Department are on same radio net.

Driver G. E. Murdock acknowledges call on his General Electric hand mike. Fleet radio maintenance technicians report that G-E quality components keep sets working at peak efficiency for unusually long periods.

Cobb County REA Co-op is managed by Carl Hamby (at car). This is another one of many progressive Co-ops that used G-E 2-way radio for fast customer service.

ALL MUNICIPAL SERVICES—police, fire, county patrol, rural electric co-op, and water supply vehicles adopt latest in mobile communication equipment . . .

G-E 2-Way Radio

What are the reasons behind the strong nationwide trend to General Electric municipal communications?

Briefly, here are two of them:

. . . Because G.E. makes more of its components than any other manufacturer, you get solid G-E quality in such major items as tubes, coils, speakers, transformers, dynamotors, capacitors and many more.

. . . Municipalities can *depend* on this equipment—and on the name behind it—for engineering, reliability and long life.

At Electronics Park, G-E units are designed and tested under every condition of weather and operating use. Whatever the size of your city, we have specialists who will survey the problem at no obligation to you. Call your nearest G-E office for action on this.

First G-E 2-way FM police radio system in the U. S. is proud claim of the Marietta force. Officers J. C. Lamb and Roy Hardin are shown here at downtown traffic post.

Police Chief Ed Hunter, at desk in headquarters, is flanked by G-E 50-watt desk-mounted transmitter.

CALL YOUR G-E COMMUNICATIONS MAN . . . at our office near you, or write: *General Electric Company, Section 1091, Electronics Park, Syracuse, New York.*

From REA county office, W. T. Spears dispatches trouble trucks to rural homes for on-the-spot check and rapid customer service.

You can put your confidence in—

GENERAL ELECTRIC

Common sense design assures easy operation

The stuffing box plate, cast integral with the head, combines with the packing and bronze stuffing box nut to seal off the operating thread. Nothing—water, sediment or ice—can reach the thread to damage it or hinder its operation. Winter or summer, the Mathews Modernized Hydrant is *dependable*—an important factor in neighborhood safety.

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

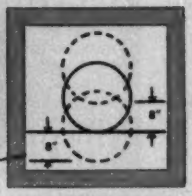
Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Mathews Modernized Hydrants offer these advantages

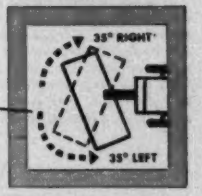
Compression-type valve prevents flooding • Head turns 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels easily raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • Operating thread only part to be lubricated • All working parts contained in barrel—removable without excavating • A modern barrel makes an old Mathews good as new • Available with mechanical joint pipe connections

EFFORTLESS POWER SWEEPING

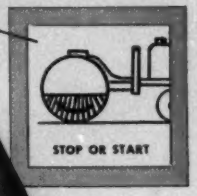
entirely controlled from operator's seat with LULL FINGERTIP HYDRAULIC CONTROL



RAISES OR LOWERS BROOM



CHANGES BROOM ANGLE



STOPS OR STARTS BROOM

OPERATOR'S CONTROL ZONE

All Broom and Tractor Controls concentrated in this area . . . readily accessible to the operator at all times.

LULL *Fluid-Driven*

SUPER SWEEPER

From the second the operator climbs into the seat of the Lull Super Sweeper to the second he gets off—he's set for full-time, high-speed sweeping. Lull Fingertip Hydraulic Control eliminates manual adjustments, backing, turning and deadheading. The operator never leaves his seat . . . never stops sweeping!

Lull Fluid Drive swiftly, smoothly transmits power to the broom—without clumsy mechanical linkages. Wear is at a minimum . . . maintenance practically nil!

Ruggedly built, for mounting on industrial tractors, Lull Super Sweepers have proved amazing durability on some of the toughest sweeping jobs in the country.

Available in 5′, 6′ and 7′ models, there's a Lull Super Sweeper priced for *your* budget. On any sweeping job . . . streets, blacktop highways, air ports, parking lots, strip mines . . . you're assured of unbeatable year round performance with a Lull Super Sweeper.

WRITE TODAY for Lull Sweeper Bulletin AD-40!

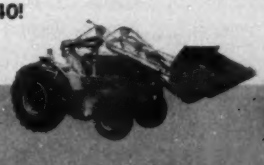
WORK ZONE

Power-controlled by the operator, this Fluid-Driven broom swiftly, efficiently whisks dust, snow, dirt and rubbish from streets, runways and ramps . . . cleans hard-to-get-at gutters . . . maneuvers close to awkward curbs.

LULL **Manufacturing Company**

3612 East 44th Street, Minneapolis 6, Minn.

Designers and Builders of
The Largest Line of Allied Equipment
for Industrial Wheel Type Tractors


SHOVELOADER

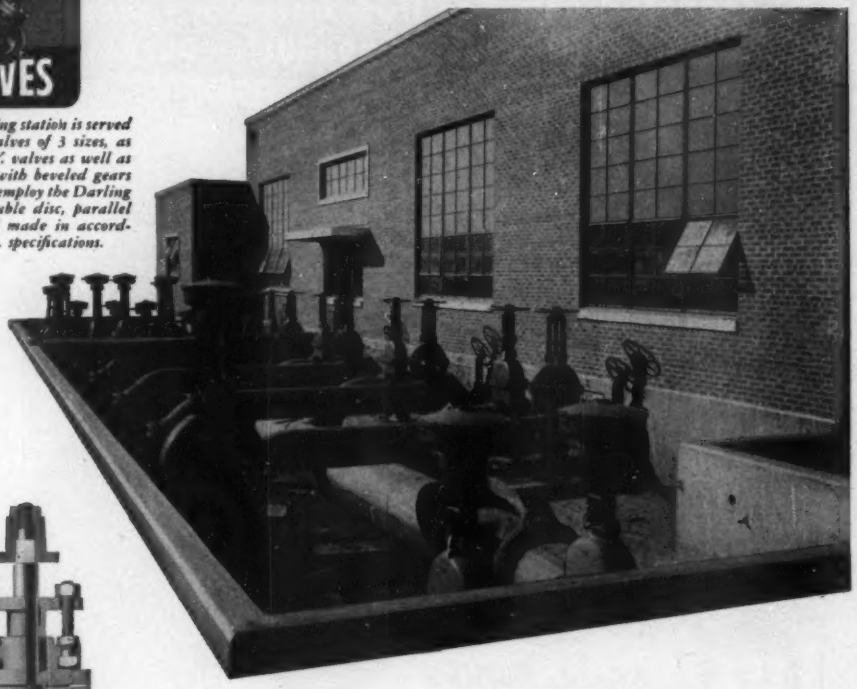
UNIVERSAL LOADER

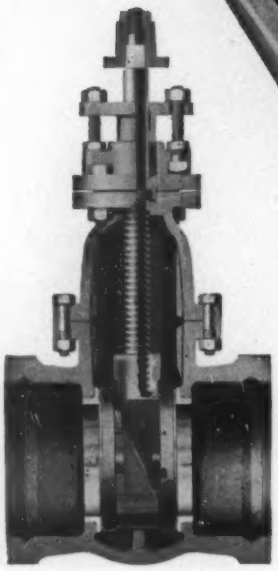
SHOVELOADERS • UNIVERSAL LOADERS • FLUID-DRIVEN SWEEPERS • LULLDOZERS • SHOULDER MAINTAINERS

DARLING VALVES

FOR PLUS VALUES, JOB-PROVED AGAIN AND AGAIN

This modern pumping station is served by Darling gate valves of 3 sizes, as shown—20" O.S.&Y. valves as well as 30" and 36" sizes with beveled gears and gear cases. All employ the Darling fully revolving, double disc, parallel seat principle, and made in accordance with A.W.W.A. specifications.





Note rugged simplicity of this unique Darling principle—just four sturdy working parts . . . two plain interchangeable no-pocket discs and two husky wedges. Assembly and maintenance is extremely easy and foolproof.

Time and money ahead

THIS new municipal pumping station gains a unique advantage proved in hundreds of similar operations throughout the country. Because these gate valves are Darlings . . . *featuring Darling's fully revolving, double disc, parallel seat principle* . . . the city as well as the water department will be time and money ahead years on end.

If you haven't yet checked into Darling gate valves of this type (shown in cutaway view at left) we'd like to give you *all* the facts on the distinctive features that always add up to . . .

1. Positive, easier closing. 2. Automatic adjustment for valve body distortion. 3. Elimination of disc-to-seat galling. 4. Uniform wear distribution. 5. Greater service life with far less maintenance.

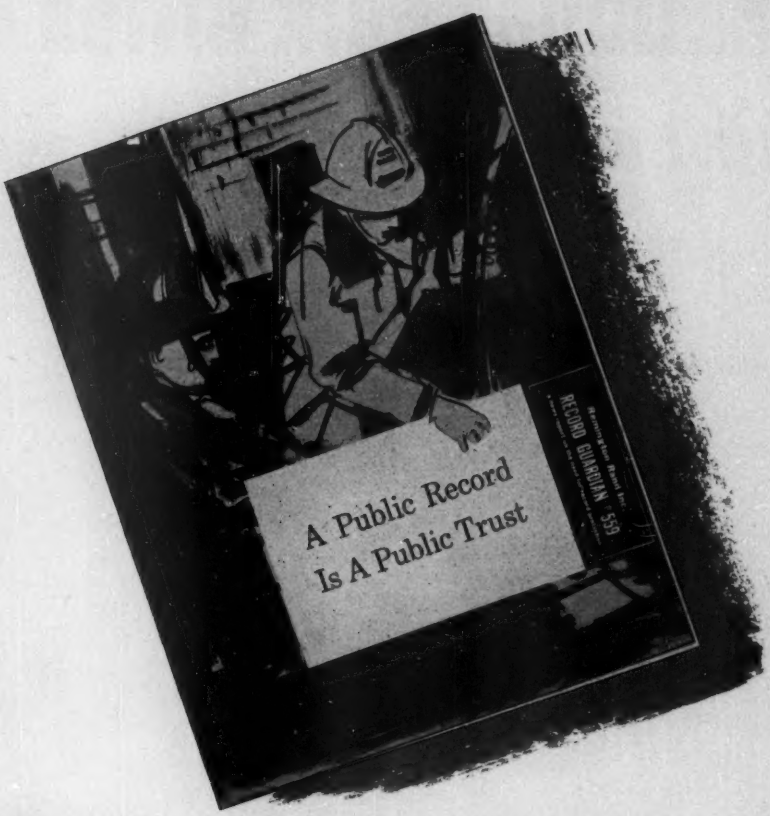
SEND FOR BULLETIN

Darling's latest bulletin is full of helpful information and describes Darling valves of *all* types for every normal or unusual service.

DARLING VALVE & MANUFACTURING CO.

Williamsport 10, Pa.

Manufactured in Canada by The Canada Valve & Hydrant Co., Ltd., Brantford 7, Ont.



Will your city records burn next?

The chances are excellent that if you read this free folder, your essential, irreplaceable records will *never* be lost to fire.

For Record Guardian SC 705 shows you exactly what happened to city and county records in four recent fires—shows you too, how easy and how inexpensive it is to protect your records *before* fire strikes.

Remember, fire never gives warning. And city officials have even more responsibility than executives in private business to take all necessary precautions against loss of their records. Use the coupon—send for this factual booklet *today*.

Remington Rand INC

Management Controls Reference Library, Room 1359
315 Fourth Avenue, New York 10, N. Y.

Yes, I would like your folder SC 705.

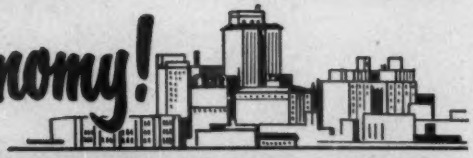
Name_____

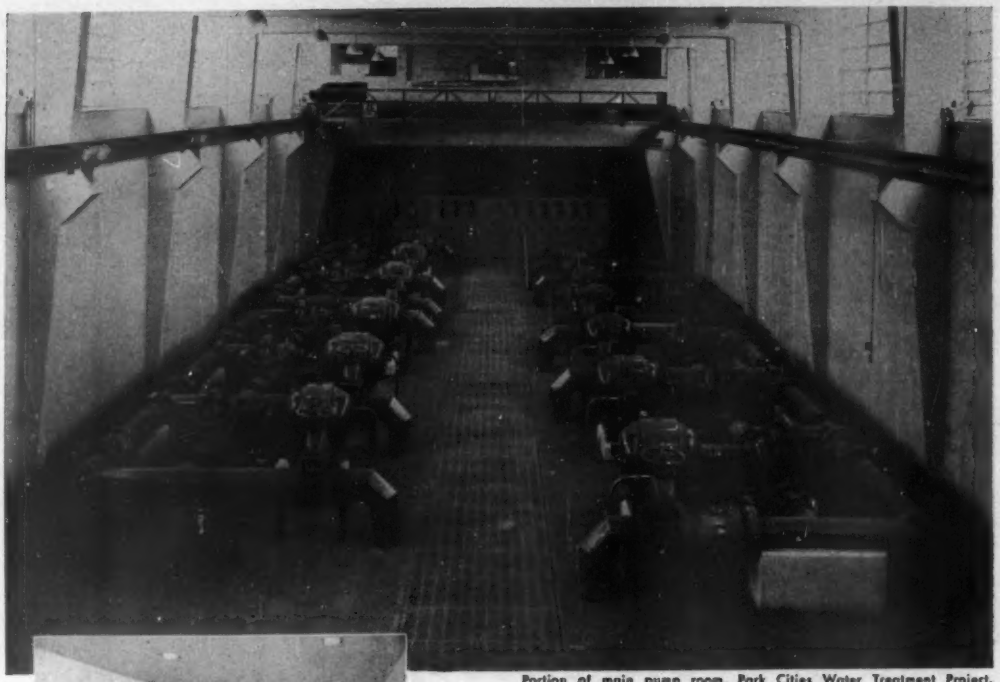
Title_____

Address_____

City_____ **Zone**_____ **State**_____

Now...Dallas Park Cities *are pumping with Economy!*





Portion of main pump room, Park Cities Water Treatment Project. Shown are 13 of the 22 Economy Pumps installed on this project.

View in University Park Booster Station, part of the Park Cities project. These Economy Pumps boost the pressure going to the overhead storage tank, located 5 miles from the treatment plant.

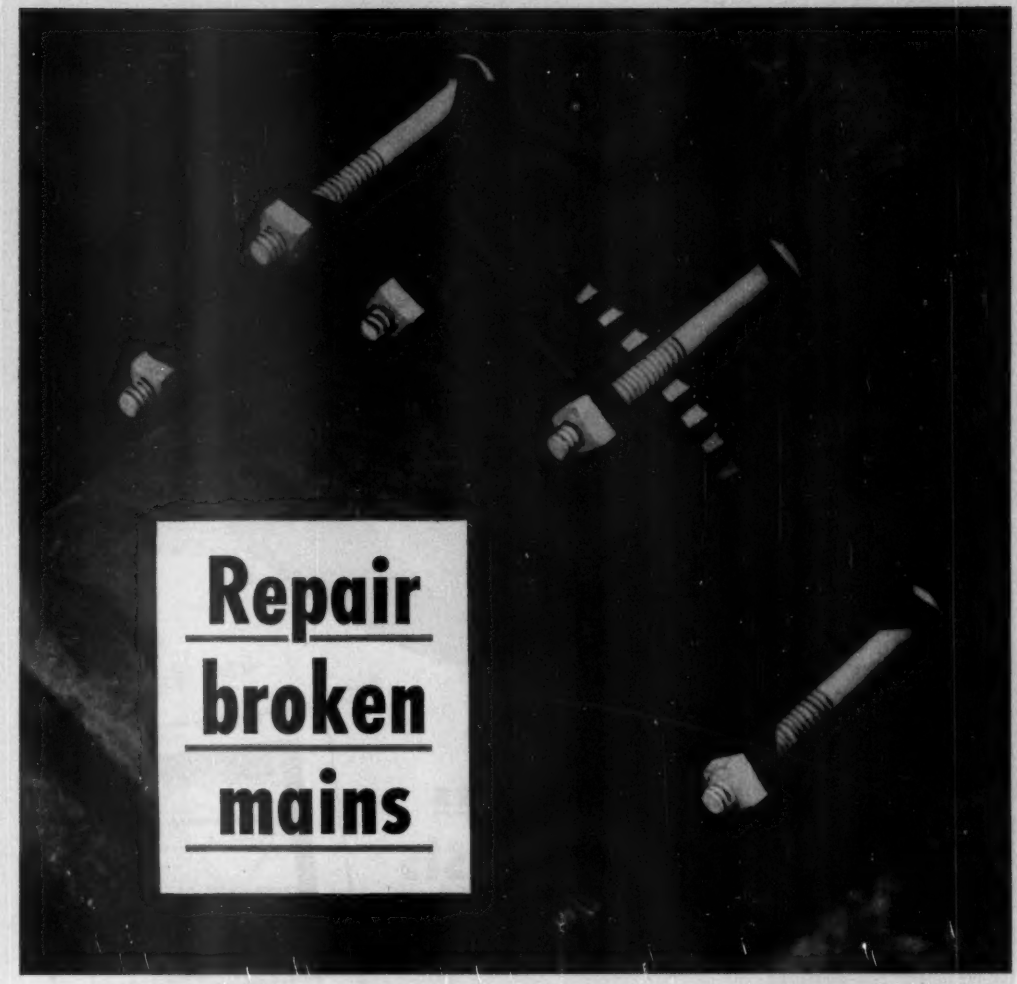
in new Park Cities, Texas, Water Treatment Plant

Economical operation over a period of years was a primary requisite of the pumps for Park Cities Water Treatment Project, Dallas. In selecting pumps, Powell & Powell, Consulting Engineers, drew up specifications which took into consideration cost of equipment, efficiency of each unit and efficiency of units operating in series, plus rigid structural requirements and refinements of mechanical detail. Under this very exacting evaluation formula, Economy Pumps, designed especially for water works service, supplied by the Lone Star Pump and Machinery Co., were selected, on the Dallas County project.

It pays to specify Economy Pumps for water supply. For detailed information and illustrated catalogs write today to Dept. AB-9.

Economy Pumps, Inc.

DIVISION OF HAMILTON-THOMAS CORP., HAMILTON, OHIO



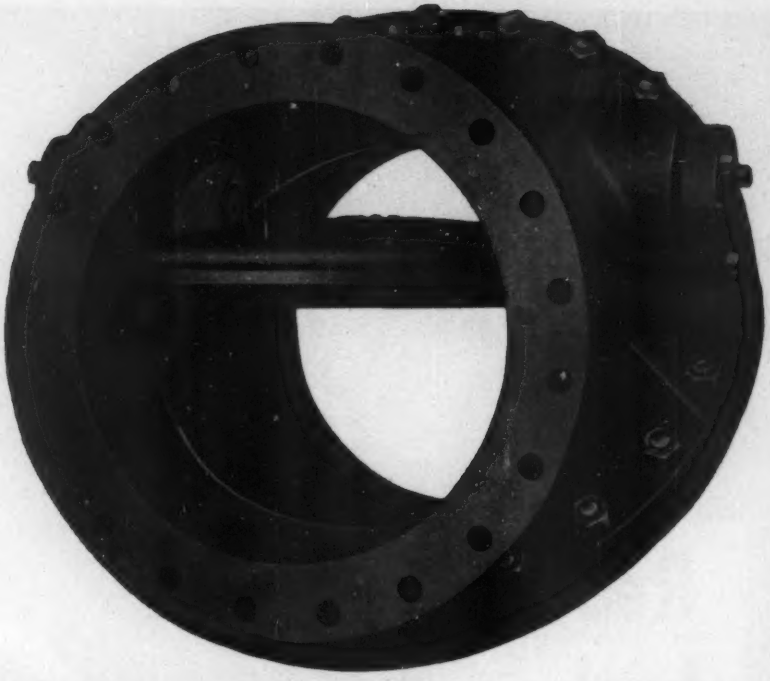
One man — 5 to 15 minutes

In the SKINNER-SEAL SPLIT COUPLING CLAMP, gasket is SEALED at break by Brass Band; at top where compression rings intermesh, by Monel Metal Band. Insures against recurrence of trouble by introducing a degree of flexibility in the line. Each clamp tests to 800 pounds line pressure. Sizes 2"-24" inclusive. Be prepared—order your supply today.

WRITE FOR CATALOG!

M. B. SKINNER CO., SOUTH BEND 21, INDIANA

SKINNER-SEAL SPLIT COUPLING CLAMP



CHAPMAN

TILTING DISC CHECK VALVES

Cut Maintenance Costs

with Cushioned-Closing

Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

There's less wear on seating surfaces, hinge pins and bearings with the cushioned closing action in a Chapman Tilting Disc Check Valve. No destructive slamming. No fatiguing flutter. No vibration of pipe lines or adjacent structure — nor danger of opening pipe joints or rupturing pipe lines. Just a quick and quiet closure that cuts maintenance costs.

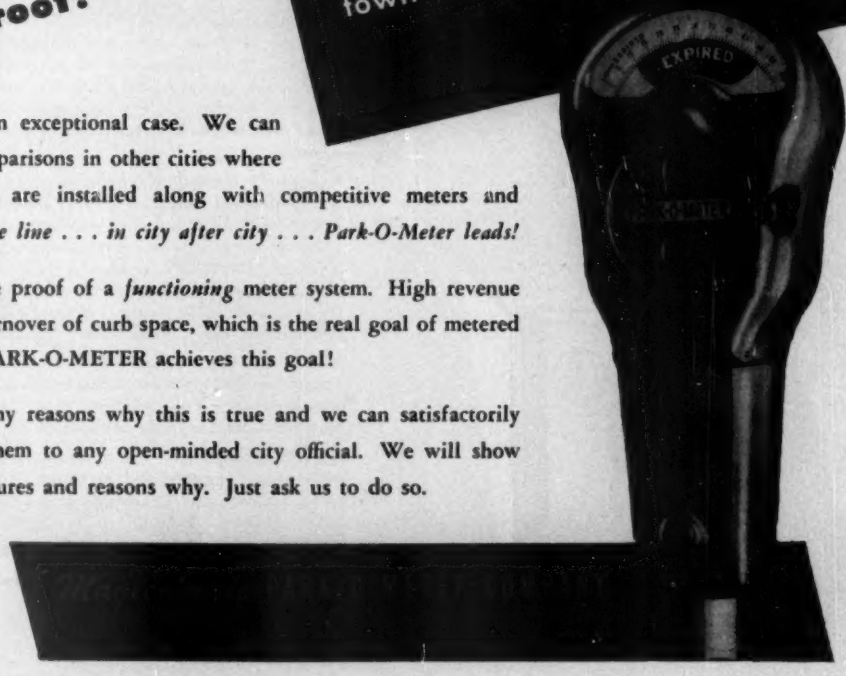
And what's more, the balanced streamlined discs in Chapman Tilting Disc Check Valves ride smoothly on the stream—reduce head losses 65 to 80% over conventional swing type checks. You'll want to know more about this maintenance-saving, more efficient check valve. Write today for engineering data, Bulletin #30.

THE CHAPMAN VALVE MANUFACTURING COMPANY
INDIAN ORCHARD, MASSACHUSETTS

227 more NET revenue from fewer meters

that's the amazing record of 840 as compared with 854 meters of another type in the down-town area of one large city!

ask us to show you proof!



Nor is this an exceptional case. We can show you comparisons in other cities where Park-O-Meters are installed along with competitive meters and *right down the line . . . in city after city . . . Park-O-Meter leads!*

Revenue is the proof of a *functioning* meter system. High revenue means high turnover of curb space, which is the real goal of metered parking. . . PARK-O-METER achieves this goal!

There are many reasons why this is true and we can satisfactorily demonstrate them to any open-minded city official. We will show you actual figures and reasons why. Just ask us to do so.

It's Good for 10 Years and More!

You have a right to expect good service and substantial returns *over a long period of time* from your parking meters. That's why it's so important to select a meter backed by service records of five to ten years and more.

Before you decide, insist on such records. And be sure to check the inside of the meter you are considering. If it's crammed with hundreds of delicate parts, look out! It's obvious that a watch wouldn't last very long at the top of a meter standard, yet some meters have as much or more mechanism than a watch.

Reduce the number of moving parts and you reduce the number of potential trouble points. That's exactly what MI-CO has done—reduced the number of moving parts—in some models there are only six. As a result MI-CO's are less likely to need repairs. But if one should need attention, the mechanism is so simple the adjustment can usually be made in a few minutes right at the meter location.

You'll be wise to choose MI-CO's because they have a reputation for low-cost maintenance, high earnings, and long life. You will find that MI-CO Meters earn more because they are seldom out of order.

We'll be glad to send you all the facts together with maintenance figures and earnings of installations in all sections of this country and Canada.

MI-CO METERS, 231 Court St., Covington, Ky.

Division of The Michaels Art Bronze Co., Inc.

Better planning by comparison

with Fairchild's 2-way Mapping Service

BY COMPARING a precise photomap on one hand with an atlas of well indexed contour maps on the other, your city engineers and other planning groups can make accurate decisions with a minimum of time and expense.

THE EFFICIENCY of the Fairchild 2-way mapping service has been proved by several city and county governments. Recent examples are Cincinnati and Hamilton County, San Diego, Tacoma, West Springfield and the Massachusetts Department of Public Works. Now, nearly every day, these communities find an office solution to some question that formerly required sending a party into the field. These progressive communities are saving time and money—they're getting accurate answers without arousing unnecessary concern on the part of property owners.

MANY CITY ENGINEERS have benefited from Fairchild's consultation service—have been able to map city districts in the order of greatest need—and eventually secure 2-way maps for the entire area as funds become available.

REQUEST FURTHER INFORMATION on how your city can plan wisely for tomorrow. Address Fairchild Aerial Surveys, Inc., 224 East 11th Street, Los Angeles 15, Calif., or 21-21 Forty-first Avenue, Long Island City, New York.

FAIRCHILD

AERIAL SURVEYS, INC.

PHOTOGRAMMETRIC ENGINEERS

"90° above or sub-zero, we can rely on our HEIL Dump Units

to meet any emergency of street and highway repairs and maintenance"

—says Louis H. Dillenburg, highway commissioner, Shawano Co. Highway Dept., Shawano, Wisconsin.

★ Heil reinforced body can't sag!

★ Heil hoist and pump assure fast dumping!

★ Heil design saves weight — permits bigger loads!

Many an official agrees that Heil Bodies and Hoists pay out in public service. Fifty years of experience equip Heil to build dump units that stay on the job with less maintenance and repair expense.

There's a Heil unit that meets *your* requirements. Heil hoists fit any truck chassis. Hoisting capacities range from 8,000 to 90,000 pounds. Heil bodies are available in all popular sizes.

Specify *Heil* on your next bid for equipment. Write for latest bulletins.

THE HEIL CO.

DEPT. 4391, 3043 WEST MONTANA STREET
MILWAUKEE 1, WISCONSIN

Factories: Milwaukee — Hillside, N. J.
District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Kansas City, Dallas, Los Angeles, Seattle BH-174

Heilliner 2-wheel Tractor and Scraper

Heil Scrapers

Heil Dozers

Heil Platform Conversion Hoist

MAXIM SNOW THROWERS

Customers report savings well beyond cost of machine, in some cases after only 2 weeks of operation.

The Maxim Snow Thrower is self-propelled, throws the snow 40 feet away in any direction, no built-up banks, handles wet or dry snow. NOW USED IN 32 OF THE 48 STATES. Send for details and address of your nearest dealer.

SEND THIS COUPON FOR DETAILED INFORMATION

THE MAXIM SILENCER COMPANY
84 Homestead Ave., Hartford 1, Connecticut

Name _____

Address _____

1M751

REALOCK FENCE

All fittings on Realock Fence have bolts so placed that nuts cannot be removed from the outside. This means that Realock Fence provides *added protection* for your grounds and property . . . effectively discourages tampering by would-be trespassers.

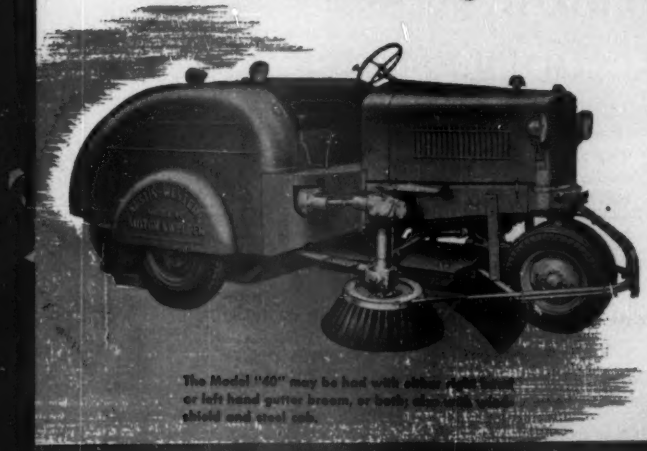
Strongly constructed, Realock Fence has high resistance to the elements because of a special galvanizing process . . . gives permanent protection and trouble-free service year after year. For additional information write our nearest sales office or consult your classified telephone directory.

THE COLORADO FUEL & IRON CORPORATION — Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION — Oakland, California
WICKWIRE SPENCER STEEL DIVISION — Buffalo, New York

REALOCK FENCE
THE COLORADO FUEL & IRON CORPORATION
CFI
BRANCHES IN ALL KEY CITIES

Get a MODEL "40" with its

Three-Wheel Design • Front Steer and Hopper at Rear



The Model "40" may be had with either right or left hand gutter broom, or both; also with shield and steel cab.

On any street, there are many things the operator of a sweeper has to watch, and with the Model "40" he sees them all. Only with this sweeper does he have unobstructed view of everything around him. There are no "blind" spots for the man behind the wheel of a Model "40."

Children don't always watch where they're going. Thanks to front steer and rear-mounted hopper, the Model "40" operator can do the watching for them, because he sits in the *natural* place "up front" where he can see what's going on.

And there's another important angle . . . not only can he operate the Model "40" *safely* but *efficiently* as well, because it's the only sweeper with gutter brooms visible at all times.

Yes, for efficiency's sake as well as safety's sake . . . GET A MODEL "40."

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

Subsidiary of Baldwin-Lima-Hamilton Corporation

Austin-Western

BALDWIN · BLH · LIMA-HAMILTON

Here is the Lowest Cost Method of Bulk Rubbish Collection Ever Devised

PICK UP, HAULING AND DUMPING operations are shown above. Large photo shows Dempster-Dumpster hauling a pre-loaded 10 cu. yd. container from downtown Nashville to sanitary fill.

You can cut your cost of rubbish collection in the trouble areas of your city in half with the Dempster-Dumpster System! We know this because it is being done in dozens of other cities. This remarkable system comprises one or more truck-mounted Dempster-Dumpsters, each with only one man, the driver, which services scores of detachable Dempster-Dumpster Containers. Containers of various designs range in size up to 12 cu. yds. (two and one-half times the capacity of the average dump truck). The Dempster-Dumpster makes scheduled calls at housing, market and business areas, schools, hospitals, etc. Each pre-loaded container is picked up, hauled to disposal area, emptied and returned. Entire operation is handled hydraulically by means of controls in truck cab.

The Dempster-Dumpster System triples man-hour efficiency . . . reduces truck investment, gas, oil, maintenance costs . . . improves "housekeeping" methods . . . reduces fire hazards . . . provides an easier, quicker, safer and more effective manner of handling bulk trash and refuse.

The cleanliness of the Dempster-Dumpster System is due to the completely closed steel containers. Trash and refuse cannot be scattered over streets and alleys by winds or scavengers. In addition, Dempster-Dumpster Containers are rat-proof and fire-proof! For complete information write today! Manufactured exclusively by Dempster Brothers, Inc.

One Dempster-Dumpster Services All Containers. . . All Designs. . . All Sizes

DEMPSTER BROTHERS, 891 Dempster Building, Knoxville 17, Tenn.

No location problems—works underneath streets, parks, etc.

No well too deep—motor-pump unit is submerged.

Speed is not limited—motor is close coupled to pump.

Silent operation.

Crooked wells are no problem.

Saves valuable space—no surface motor or pump house.

THE BJ SUBMERSIBLE PUMP HAS IMPORTANT INSTALLATION ADVANTAGES NOT OFFERED BY ANY OTHER PUMP

Safe against vandalism.

Capacities to 20,000 gpm. Heads to 1500 ft.

No water contamination by dirt, oil, or foreign matter.

Can work beneath ice and away from atmospheric changes.

Unaffected by floods.

Get the full story on how BJ Submersibles can answer your needs . . . send the coupon now!

Byron Jackson Co.
Since 1872
P.O. Box 2017, Terminal Annex, Los Angeles 54, Calif.
Offices in Principal Cities

Precision assembled at factory—installed without adjustments.

Installation is easy.

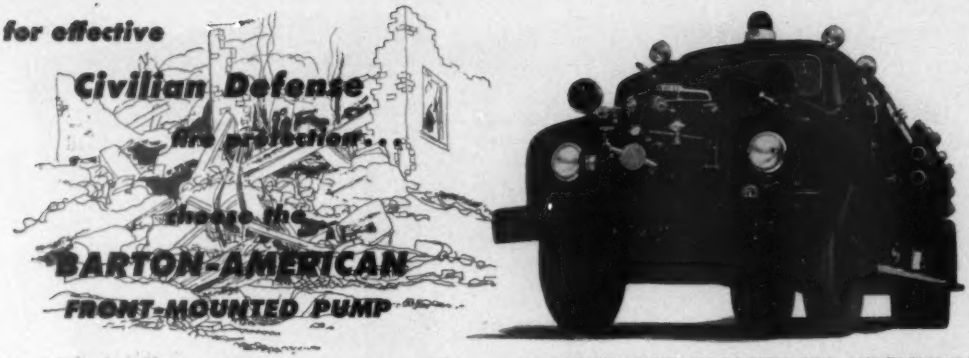
BJ PUMP DIVISION, DEPT. 50
Please send me full information on the BJ SUBMERSIBLE.

NAME_____

CO. or DEPT._____

ADDRESS_____

CITY_____ STATE_____



Check the conditions fire fighting equipment for Civilian Defense should be designed to meet. Then examine these characteristics of the Barton-American UA-50 front-mounted pump*. You'll find that you can't make a better choice!

AMERICAN-MARSH PUMPS

Canadian Apparatus Plant:
American-Marsh Pumps (Canada) Ltd.
Stratford, Ontario, Canada

Canadian Sales2Representative:
C. E. Hickey & Sons, Ltd.
Hamilton, Ontario

MAXIMUM TANK CAPACITY FOR INDEPENDENT WATER SUPPLY. *Booster tanks carrying from 1000 to 2000 gallons* can be used on UA-50 equipped trucks.

FAST DRAFT FROM POND OR STREAM. *Refills booster tank at 600 g.p.m.* — less than 2 minutes for 1000 gals.

DELIVERS BOTH LARGE CAPACITY HOSE STREAMS AND BARTON SUPER-FOG. You're equipped to fight the kind of fire you find with a single piece of equipment.

FULL EFFECTIVENESS "ON THE GO". You can "fight your way in" by laying fog screens ahead of truck.

MOUNTS ON STANDARD TRUCK CHASSIS. Repairs for the truck are as near as your closest dealer or parts jobber.

*Note how each of these features solves fire protection problems in rural and outlying districts.

AMERICAN-MARSH PUMPS, INC., BATTLE CREEK, MICHIGAN

Greetings, members of the APWA

We've been busy since our last meeting

Listed below are the Nichols Monohearth mechanically stoked refuse incinerator plants under construction or contracted for since our 1950 meeting in New York.

Winnipeg, Ont., Canada (4th Unit)	180	Tons Daily Capacity	
Jacksonville, Fla., (3rd Plant)	300	" " "	
Kitchener, Ont., Canada	225	" " "	
Philadelphia, Penna. (2nd Plant)	250	" " "	
Town of Oyster Bay, N. Y.	150	" " "	
Town of Tonawanda, N. Y. (3rd Unit)	90	" " "	
Buffalo, N. Y.	400	Tons Daily Capacity	
Long Beach, N. Y.	200	" " "	
Glendale, Calif.	112½	" " "	
Toronto, Ont., Canada	900	" " "	
Bloomsburg, Penna.	60	" " "	
Calgary, Alta., Canada	150	" " "	

Monohearth incinerator capacity will reach a total of approximately *11,000 Tons daily* when all the above-named plants are placed in operation. This record is unmatched, proof of Nichols superiority.

You are invited to visit our booth, No. B-17, at the 1951 Public Works Congress and Equipment Show, Veterans' Memorial Building, Detroit, Michigan, September 16-19.

NICHOLS ENGINEERING & RESEARCH CORPORATION

70 PINE ST., NEW YORK 5, N. Y.

1920 N. Meridian St., Indianapolis 2, Ind. — 40 S. Los Robles Ave., Pasadena 1, Calif.

1477 Sherbrooke St. W., Montreal 25, Canada

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More Work Per Day

More Work Days Per Year

Thanks to the Unequaled POWER, TRACTION, and MANEUVERABILITY of Exclusive ALL-WHEEL DRIVE and STEER

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.

Subsidiary of Baldwin-Lima-Hamilton Corporation

Austin-Western

BALDWIN BLH LIMA-HAMILTON

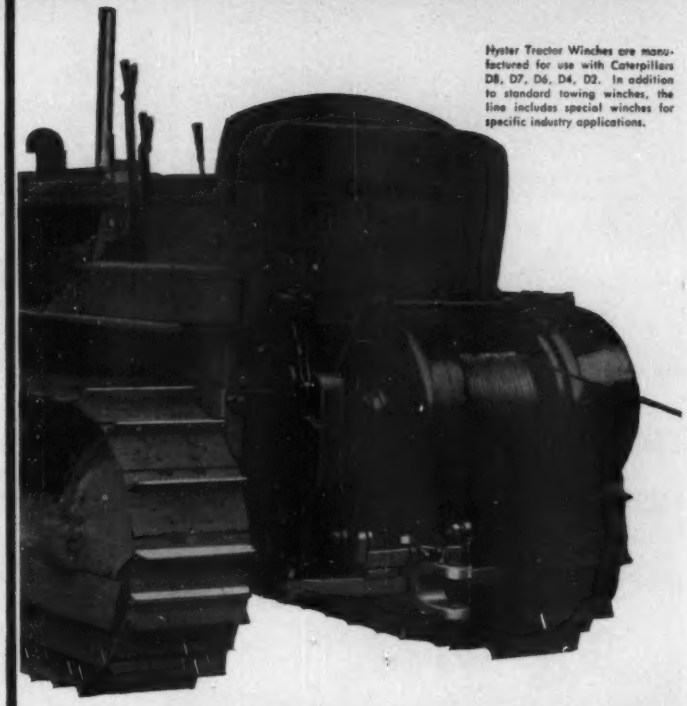
More than 40,000 satisfied owners of

HYSTER® Tractor Winches

Hyster Towing Winches increase tractor drawbar pull by as much as 63% when utilizing the maximum line pull of the winch. They are used to —

- ✔ **MOVE** heavy equipment.
- ✔ **RESCUE** heavy trucks or pieces of equipment that are mud-bogged.
- ✔ **PULL** the tractor itself out of mud or other situations that have incapacitated the tractor.
- ✔ **INSURE** against work stoppage or down-time on any project using equipment.
- ✔ **ASSIST** in stump and land clearing operations.
- ✔ **INCREASE** production in logging operations through the use of arch-logging methods.
- ✔ **GROUND SKID** or pan skid logs.
- ✔ **YARD** logs.
- ✔ **PERFORM** innumerable lifting jobs in conjunction with crane attachments.

Hyster's complete line of tractor tools includes winches, yarders, donkeys, cranes, logging arches and sulkies®; Grid Rollers for bituminous road salvage; and Hystaway®, the 5 in 1 tool that includes dragline, clamshell, crane, shovel and backhoe.



Hyster Tractor Winches are manufactured for use with Caterpillars D8, D7, D6, D4, D2. In addition to standard towing winches, the line includes special winches for specific industry applications.

HYSTER COMPANY

2902-61 N. E. Clackamas, Portland 8, Ore.
1802-61 North Adams St., Peoria 1, Illinois

World's Largest Manufacturer of Tractor Winches

Sold and Serviced for more than 20 years by CATERPILLAR-HYSTER dealers all over the world

A high percentage of all Caterpillar Diesel tractors are equipped with Hyster winches.

Caterpillar dealers around the globe—more than 400—sell and service Hyster towing winches for Caterpillar-built tractors.

Hyster towing winches are used in these basic work classifications: CONSTRUCTION, INDUSTRIAL, LOGGING, MINING, OIL and GAS, MILITARY, AGRICULTURE, TRANSPORTATION, GOVERNMENT.

Any Caterpillar dealer will gladly tell you about Hyster tractor winches.

Balance your street sweeping budget with MOBIL-SWEEPER

You can keep your community happy with cleaner streets... *at lower cost.* Every budget is getting a closer check nowadays. Make sure you stay within yours by using the faster, more efficient Mobil-Sweeper.

Ten years of Mobil-Sweeper development brings you unsurpassed sweeping action. On streets, gutters, alleys, highways, parks and airports... even steepest hills, you get top sweeping performance.

Cleaner Sweeping is accomplished through the longer draught arms that make the rear pickup broom "full-floating" in the true sense. Deepest dips get a clean sweep where ordinary sweepers would skip over or drop refuse.

Gutters Are Swept More Thoroughly because the special "decreased arc" type gutter broom segments retain their flipping action longer, giving hundreds of extra miles of clean sweeping.

More Pavement Can Be Swept without stops because Mobil-Sweeper's big 200-gallon water tank provides spray for more pavement with fewer refills.

And Don't Be Fooled On Dirt Hopper Capacity ...be sure that your sweeper fills to its rated capacity every time under normal operating conditions. Mobil-Sweeper fills its 2⅔ cu. yd. hopper to the overflow every time – that's what counts.

Maintenance Is Less Costly because the International Harvester engine lends itself to your standard maintenance.

It's The Safest Sweeper Built—Mobil-Sweeper protects the driver with shatterproof windshield, steel cab and 4-wheel hydraulic brakes. The low overall height and steel cab permit passage under low-hanging trees.

Write for details on how your community can save on street sweeping costs today!

MOBIL-SWEEPER
DIVISION OF
THE CONVEYOR CO.
3260 E. SLAUSON AVENUE
LOS ANGELES 58, CALIF.

CONVEYCO

THE CONVEYOR COMPANY
3260 East Slauson Avenue, Los Angeles 58, Calif. AC-10

Gentlemen:
Please send catalog with complete details and specifications for the Mobil-Sweeper.

Name _____ Title _____

Address _____ City _____

County _____ State _____

Yankee Blizzard meets its master

International T-9 wins the snow fight to keep approaches to Ashfield, Massachusetts, open

Up in the deep snow country, Ashfield, Massachusetts, beats the biggest blizzards with an International T-9 that keeps roads open no matter how heavy the fall. An average performance for this rugged red crawler is to clear 20 inches of wet, heavy, sticky snow from 25 miles of highway in 12 hours.

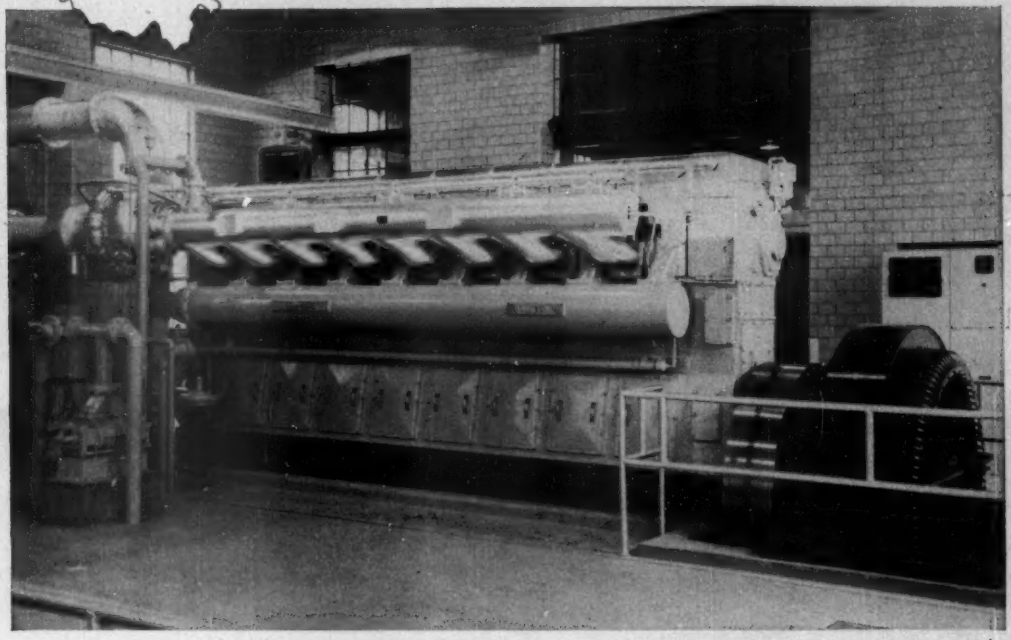
You can choose the right machine for your own community's snow removal and street maintenance work from International's full line of tractors with matched equipment handled by your nearest International Industrial Distributor.

Every model is built for a future of hard work at low cost. Ask your distributor for the inside story . . . and remember, he maintains complete maintenance and repair facilities to back up your equipment year after year.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

SNOW GOUGER—T-9 pushes drifts aside with power to spare.

Columbus officials got the facts, *and* A SUPERIOR DIESEL



The facts about the performance of Superior Diesels are easy to get because there are so many of them in service throughout the U. S. A.—and throughout South America. Somewhere nearby there's an industrial plant or municipal power project, or a public building using dependable Superior or Atlas Diesels.

So, it was easy for city officials of Columbus, Ohio, to get all the facts about service-life, fuel economy, conservative ratings, minimum maintenance requirements. With this information it was logical to decide that a Superior Diesel would do the job—every day, year-'round.

If you have a power generation problem, it will pay you to get the facts on Superior and Atlas Diesels.

Superior ENGINES

ATLAS Imperial DIESEL ENGINES

THE NATIONAL SUPPLY COMPANY

ENGINE DIVISION

Plant and General Offices: Springfield, Ohio

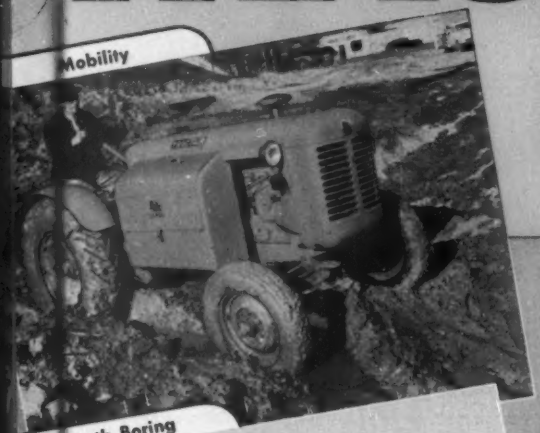
DIESEL ENGINES • DUAL FUEL ENGINES • GAS ENGINES

Le Roi gives you more for your MONEY!

more utility
more profits

TRACTAIR'S THE BUY-

Mobility



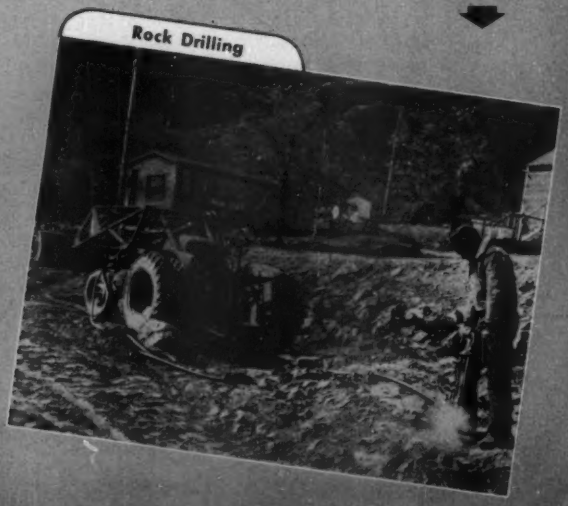
Tractair Gets Around thanks to good weight distribution, excellent traction, and a powerful 35 hp. engine. You have economical air-power when you need it despite rough ground, mud, and steep inclines.

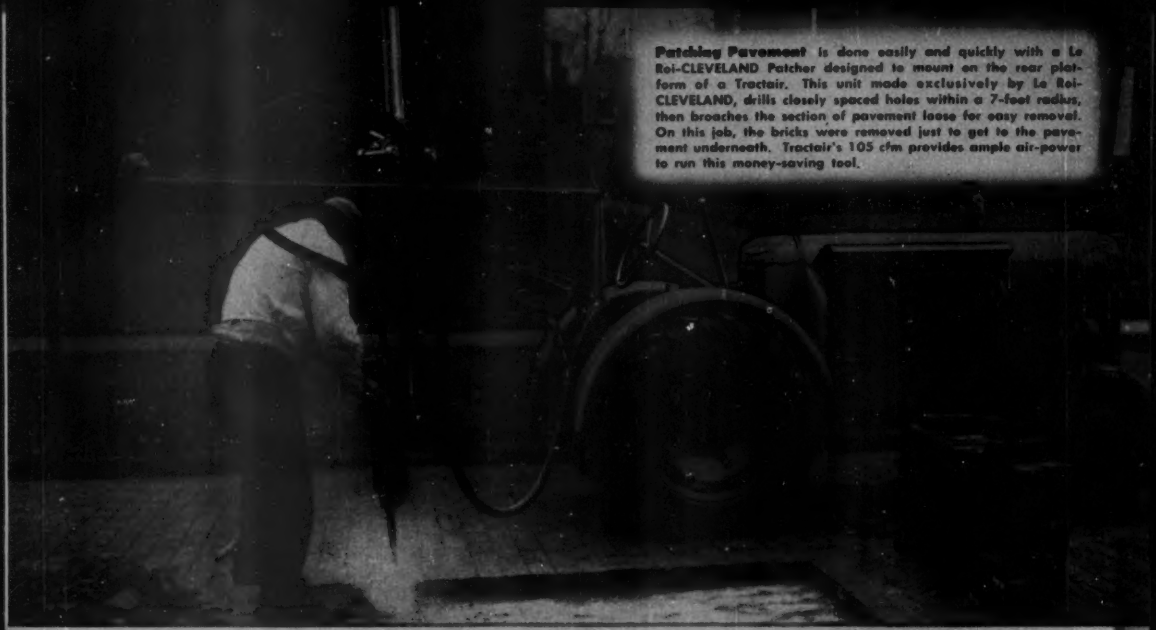
Earth Boring

Drilling Anchor Holes with an auger air-powered by mobile Tractair saved a utility company $18,000.

Secondary Drilling on a mountain highway relocation and grading job is made easy with Le Roi-CLEVELAND sinkers and self-propelled air-power from Tractair.

Rock Drilling





Patching Pavement is done easily and quickly with a Le Roi-CLEVELAND Patcher designed to mount on the rear platform of a Tractair. This unit made exclusively by Le Roi-CLEVELAND, drills closely spaced holes within a 7-foot radius, then broaches the section of pavement loose for easy removal. On this job, the bricks were removed just to get to the pavement underneath. Tractair's 105 cfm provides ample air-power to run this money-saving tool.

—for Money-saving Usefulness

You get air power and tractor power in a single self-contained unit

Just think what you can do with air power to keep your costs down — break pavement, dig clay, drill rock, tamp fill, vibrate concrete, and many other jobs.

And Tractair gives you *self-propelled* air power for still greater utility — anywhere, anytime. There's no need to tie up trucks or men for transportation. Tractair does it all. Lets you put the money-saving usefulness of air to work where you need it.

Moreover, Tractair can be equipped with a sturdy front-end loader having eight quickly interchangeable accessories. When so-equipped Tractair handles loading, lifting, back-filling, and snow-plowing in addition to its other duties.

That's why Tractair's the buy for money-saving usefulness. And you cut costs further still when you team Tractair with Le Roi-CLEVELAND air tools. Job data-sheets and bulletins showing how Tractair saved money for others are available upon request. Write today.

LE ROI COMPANY

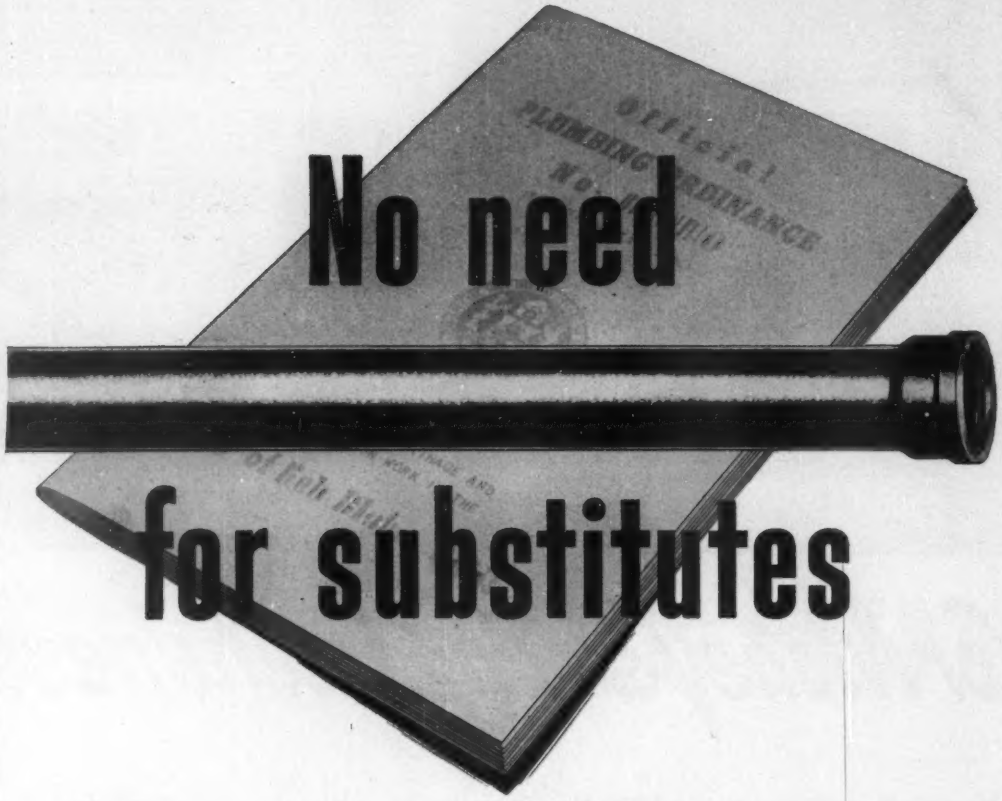
MILWAUKEE 14, WISCONSIN

PLANTS: MILWAUKEE • CLEVELAND • GREENWICH, OHIO

T-18

Distributors in all these principal cities

ALABAMA: Birmingham, Mobile — ARIZONA: Phoenix — ARKANSAS: Little Rock — CALIFORNIA: Bakersfield, Long Beach, Los Angeles, San Francisco—COLORADO: Denver, Grand Junction — CONNECTICUT: Hartford — FLORIDA: Jacksonville, Miami, Tampa — GEORGIA: Decatur—IDAHO: Boise, Idaho Falls, Twin Falls, Wallace—ILLINOIS: Chicago —INDIANA: Indianapolis—IOWA: Cedar Rapids, Waterloo—KANSAS: Great Bend, Kansas City, Pratt, Wichita — KENTUCKY: Lexington, Louisville — LOUISIANA: New Orleans, Shreveport — MAINE: Augusta — MARYLAND: Baltimore, Hyattsville — MASSACHUSETTS: Hyde Park, Newton Highlands — MICHIGAN: Detroit, Grand Rapids — MINNESOTA: Duluth, Minneapolis — MISSISSIPPI: Jackson — MISSOURI: Joplin, St. Louis — MONTANA: Billings, Great Falls — NEBRASKA: Omaha — NEW HAMPSHIRE: Manchester — NEW JERSEY: Cranford, Kingston — NEW MEXICO: Albuquerque — NEW YORK: Albany, Binghamton, Buffalo, Long Island City, Newburgh, Rochester, Saugerties, Syracuse, Woodside (L.I.) — NORTH CAROLINA: Charlotte — NORTH DAKOTA: Fargo — OHIO: Cincinnati, Cleveland, Columbus, Dayton, Toledo—OKLAHOMA: Oklahoma City, Tulsa—OREGON: Portland — PENNSYLVANIA: Bethlehem, Harrisburg, Philadelphia, Pittsburgh — RHODE ISLAND: Providence — SOUTH CAROLINA: Columbia — SOUTH DAKOTA: Sioux Falls — TENNESSEE: Chattanooga, Knoxville, Memphis, Nashville — TEXAS: Dallas, El Paso, Houston, Lubbock, San Antonio — UTAH: Salt Lake City — VIRGINIA: Richmond, Roanoke — WASHINGTON: Seattle, Spokane — WEST VIRGINIA: Clarksburg, South Charleston — WISCONSIN: Milwaukee — WYOMING: Casper



Fortunately, present conditions in the soil pipe industry do not parallel those during World War II. The availability of cast iron makes it unnecessary—and needless—to let down the bars of your plumbing code to substitute materials.

Cast iron soil pipe and fittings are still plentifully available to do their time-honored job—*permanent* installations that protect the health of your community and guard against needless and expensive repairs.

Local health authorities have long recognized the importance of soil and waste disposal lines that will stand up year in, year out—decade after decade! That is why plumbing codes everywhere in the country are built around **cast iron soil pipe** and fittings. Enforce your code—give your community the protection intended by law.

CAST IRON SOIL PIPE INSTITUTE
Heurich Building, 1627 K. St., N.W., Washington 6, D. C.

This advertisement is sponsored by

CAST IRON SOIL PIPE INSTITUTE

Alabama Pipe Company
The American Brass & Iron Foundry
Anniston Foundry Company
Anniston Soil Pipe Company
Attalla Pipe & Foundry Company, Inc.
Buffalo Pipe & Foundry Corporation
The Central Foundry Company
Charlotte Pipe & Foundry Company
Combustion Engineering—Superheater, Inc.
Crown Pipe & Foundry, Inc.
The Eastern Foundry Company
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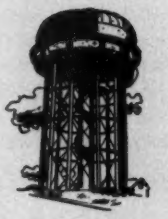
Herco Foundry, Inc.
T. C. King Pipe & Foundry Company
Pacific Cast Iron Pipe & Fitting Company
Peerless Pipe & Foundry Company, Inc.
Reading Foundry Company
Rich Manufacturing Company of California
Rudisill Foundry Company
Sanitary Company of America
Somerville Iron Works
Tyler Pipe & Foundry Company
Walker Machine & Foundry Corporation
Western Foundry Company
Williamstown Foundry Corporation

For greater yield in plant or field . . .

REPLACE WITH ONE OF THESE

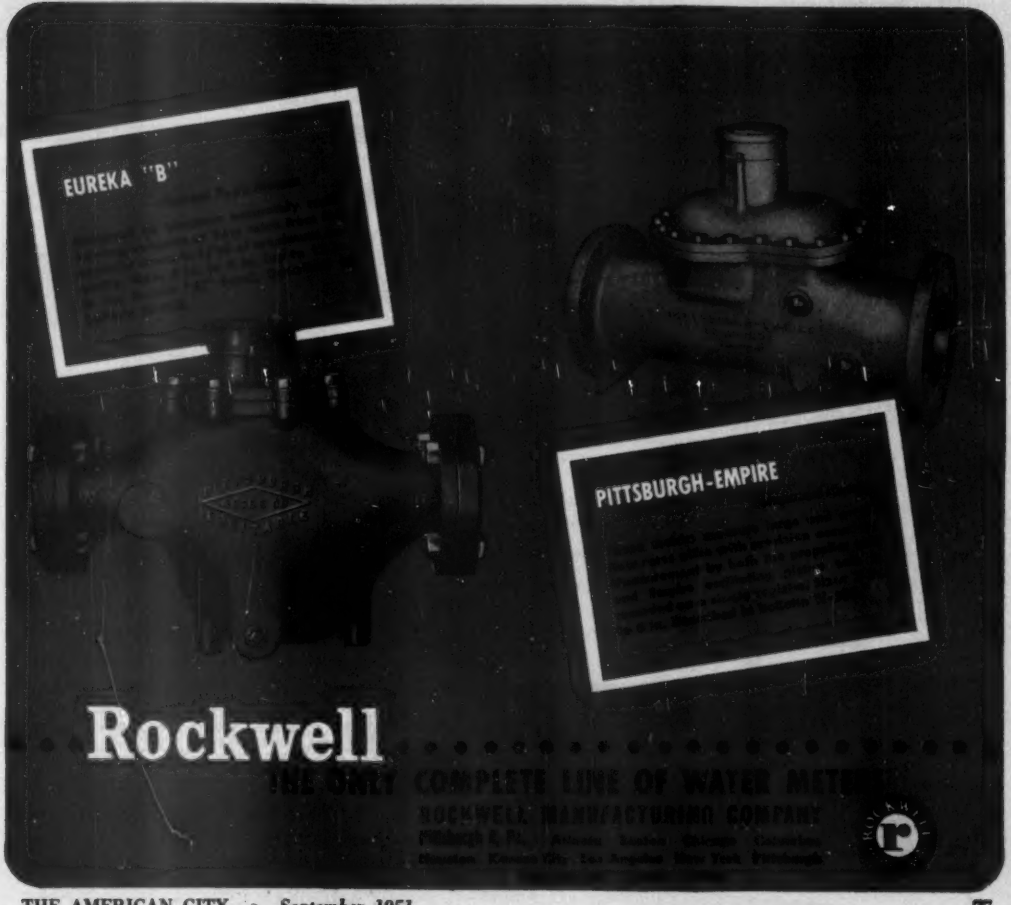
BIG ROCKWELL METERS



Big water meters are a major investment. Their true worth must be based on their revenue earning performance—their freedom from breakdowns and sticking—their economy to repair.

Cost-minded water works engineers specify big Rockwell meters because they will earn more revenue and yield more service per dollar invested. You'll find them simple, easy to repair, and constructed with typical Rockwell care from the finest materials obtainable.

Immediate deliveries can be made from warehouse stocks in most areas.



Dependable because they are tough and rugged. Made to withstand the wear and tear of the modern day strain and stress. For generations of incomparable service, only cast iron pipe can qualify. Serving the industry with Super de Lavaud Cast Iron Pipe, centrifugally, in modern lengths.

General Sales Offices

ANNISTON, ALABAMA

We invite inquiries to our nearest sales office

122 So. Michigan Avenue
Chicago 3, Ill.

350 Fifth Avenue
New York 1, New York

ALABAMA PIPE COMPANY

ANNISTON ALABAMA

GAS STORAGE TANKS

● Whether you want conventional high-pressure units or something *special*—send us your inquiries. COLE can build you the kind of high-pressure tanks or vessels you require—any size, any shape, any metal. Our experience (of almost a century) in the design and fabrication of metal tanks may be of help to you.

Send us your inquiries for tanks of all types. Write for free catalog— "Tank Talk"

R. D. COLE MFG. CO.

NEWNAN, GA. Established 1854

ANTHRAFILT

(Reg. U. S. Pat. Off.)

A Filter Medium For All Purposes

Has outstanding advantages over sand and quartz media:

1. Length of filter runs doubled
2. Only about one-half as much wash water required
3. Less coating, caking or balling with mud, lime iron or manganese
4. Filters out of service less because of shorter wash cycle
5. Better removal of bacteria, micro-organic matter, taste and odor
6. Increased filter output with better quality effluent
7. Not just the top portion, but the entire bed, aids in filtering
8. Can be used in all types of filters using a filter medium
9. A perfect supporting medium for synthetic resins
10. An ideal filter medium for industrial acid and alkaline solutions
11. Decidedly advantageous for removal of fibrous material as found in swimming pool filters

Additional information, recommendations and quotations furnished upon request by

PALMER FILTER EQUIPMENT COMPANY

822 E. 8th St. Erie, Pa.

Engineers and Sales Agents

REPRESENTING —

ANTHRACITE EQUIPMENT CORP.

Anthracite Institute Bldg., Wilkes-Barre, Pa.

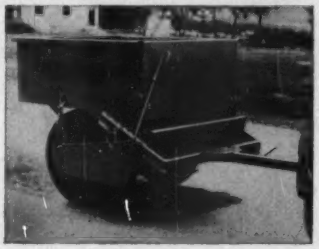
SWENSON SIDEWALK SAND SPREADER

A new fast way to cover icy walks with sand, ashes, cinders, salt, etc.

Can be used on road jobs all year 'round.

1-yard hopper

Write for circular.



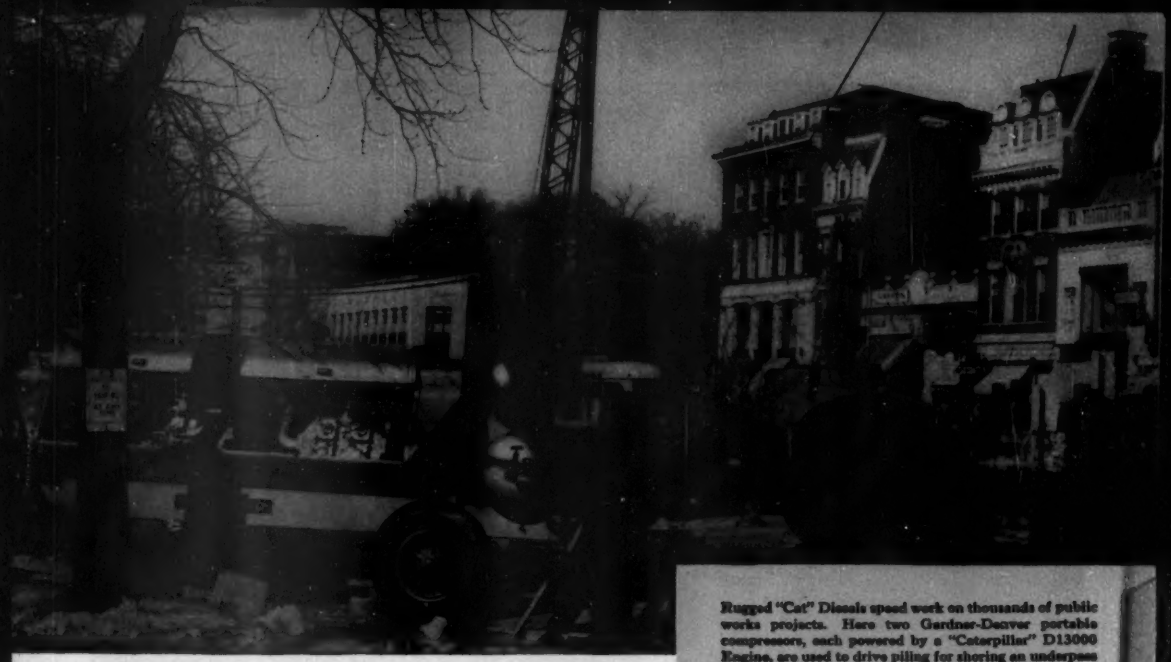
SWENSON SPREADER & MFG. CO., Lindenwood, Ill.

USED PARKING METERS

For Sale

Park-O-Meter, Dual and Mark-Time—some late Models. Low Price for quick sale. Write:

P. O. Box 4138, Bellevue 2, Pa.



Rugged "Cat" Diesels speed work on thousands of public works projects. Here two Gardner-Denver portable compressors, each powered by a "Caterpillar" D13000 Engine, are used to drive piling for shoring an underpass in Washington, D. C.

There's a big job ahead

The job of maintaining more than three million miles of roads and streets is a vital part of America's fight to be strong and stay free. And it won't be easy. We're entering a critical period that will separate "the men from the boys" in the field of construction and maintenance equipment.

Military needs and Defense Rated Orders are taking their share of "Caterpillar" production. Shortages of steel and other materials add to the difficulty of supplying the demand for new machines. This means that *present equipment must be kept in use.*

"Cat" Diesel Engines, Tractors and Motor Graders are built with the stamina to stand up and serve you faithfully for a long time. But how they're operated and maintained is up to you. Good care pays off.

You can add many hours to equipment life if you follow sound maintenance practices. Anticipate your parts needs. Talk it over with your "Caterpillar" dealer. He is qualified to give competent opinion. If a part is not readily available, he has the tools and knowledge to rebuild many worn parts—and keep your equipment on the job.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

You're the Doctor

Don't let your engine overheat. Maintain the cooling system, keeping it free of scale, rust and sediment. Use soft or treated water and, when freezing temperatures exist, protect your engine with anti-freeze. Clean the radiator periodically, removing foreign matter from the core by brushing or washing. Use chemical flushing solutions. Prevent engine troubles which come with overheating.

REREAD YOUR OPERATOR'S INSTRUCTION BOOK
GOOD CARE CAN ADD MANY EXTRA HOURS OF EQUIPMENT LIFE

CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

Fluoridation News

1945 1951

IN TEXAS, TOO—

CITY OF MARSHALL

MARSHALL, TEXAS

January 24th, 1951

Wallace & Tiernan Co. Inc.
1112 National City Bldg.
Dallas 1, Texas

Gentlemen:

The City of Marshall, Texas began fluoridation of its municipal water supply in the Spring of 1946, under the jurisdiction of the Texas State Health Department. Marshall was the first city in the State of Texas to use fluoridation.

In February 1950, we changed our method of fluoridation by feeding sodium fluoride with a Wallace & Tiernan Type NA Dry Chemical Feeder.

We have found the Wallace & Tiernan Type NA Feeder to be simple in operation, easy to adjust and maintain, and extremely accurate for feeding sodium fluoride. We have been able to hold the fluoride content of our treated water very constant by using this feeder.

We would be glad to recommend this feeder to any town considering adding fluorides to the public water supply.

Very truly yours,

CITY OF MARSHALL,
J.W. SCHONHARDT
Water Superintendent

When *your* community is ready to look into fluoridation — and after you have consulted your State Department of Health — you'll find W&T Engineers ready and willing to help you.

WALLACE & TIERNAN
COMPANY, INC.
CHLORINE AND CHEMICAL CONTROL EQUIPMENT
NEWARK 1, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

Barbara Fritchie's house in Frederick, Maryland as it appeared in the year 1866

The City of Frederick has a cast iron water main in service that was laid in 1845, seventeen years before Barbara Fritchie's flag-waving defiance of "Stonewall" Jackson's army. The changing channel of a creek undermined her humble home, now replaced in replica to serve as a museum. Yet Frederick's 106-year-old cast iron main, like many others, has survived the changing conditions of a century. Shock-strength, beam-strength and crushing-strength are inherent in cast iron pipe. Because of these strength-factors and effective resistance to corrosion, cast iron water and gas mains, laid over 100 years ago, are still serving in the streets of 38 cities in the United States and Canada. **United States Pipe and Foundry Co., General Offices, Burlington, N. J. Plants and Sales Offices Throughout the U. S. A.**

U.S. PIPE

NUMBER NINE OF A SERIES

BADGER PRECISION MEANS "MORE FOR YOUR METER-MONEY"

"MEASURING THE WATER OF THE WORLD"

First for Accuracy • Low-Cost Maintenance • Durability • Sensitivity

BADGER *Water* METERS

BADGER METER MFG. CO., Milwaukee 10, Wis.

Branch Offices: New York City • Philadelphia
Worcester, Mass. • Savannah, Ga. • Cincinnati • Chicago • Kansas City • Waco, Texas
Salt Lake City, Utah • Guthrie, Okla. • Seattle, Wash. • Los Angeles

Barber-Greene

Use the New

MODEL 544 SNOW LOADER

to cut Snow Loading Costs!

Year 'round Usage

Swivel Conveyor
Loads and Trims Long, High-Sided Trucks
Trucks Travel Parallel—No Jockeying
15 m.p.h. Road Speed
Ample Traction and Stability

for fast travel - for sure crowding

- ☐ 7-11 yards per minute
- ☐ One-man Operation
- ☐ Low Clearance — 12' 0"
- ☐ Loads over Cab or with Trucks Alongside
- ☐ Quick-acting Hydraulic Controls
- ☐ Loads Leaves, Cinders, Coal, Sand, Gravel, Dirt, etc., at up to 3 y.p.m.

for

CITIES • TOWNS • VILLAGES
TERMINALS • INDUSTRY • SHIPPING
DOCKS • PARKING LOTS • STORAGE YARDS

Maintain:

METER REVENUE • SAFETY
FIRE AND EMERGENCY TRAFFIC
DELIVERIES • TRANSPORTATION

Barber-Greene
AURORA, ILLINOIS
Constant Flow Equipment

Barber-Greene Company
Aurora, Illinois
Send full information on new B-G Model 544 Snow Loader

Name .....
Position .....
Address .....
City ..... Zone..... State.....

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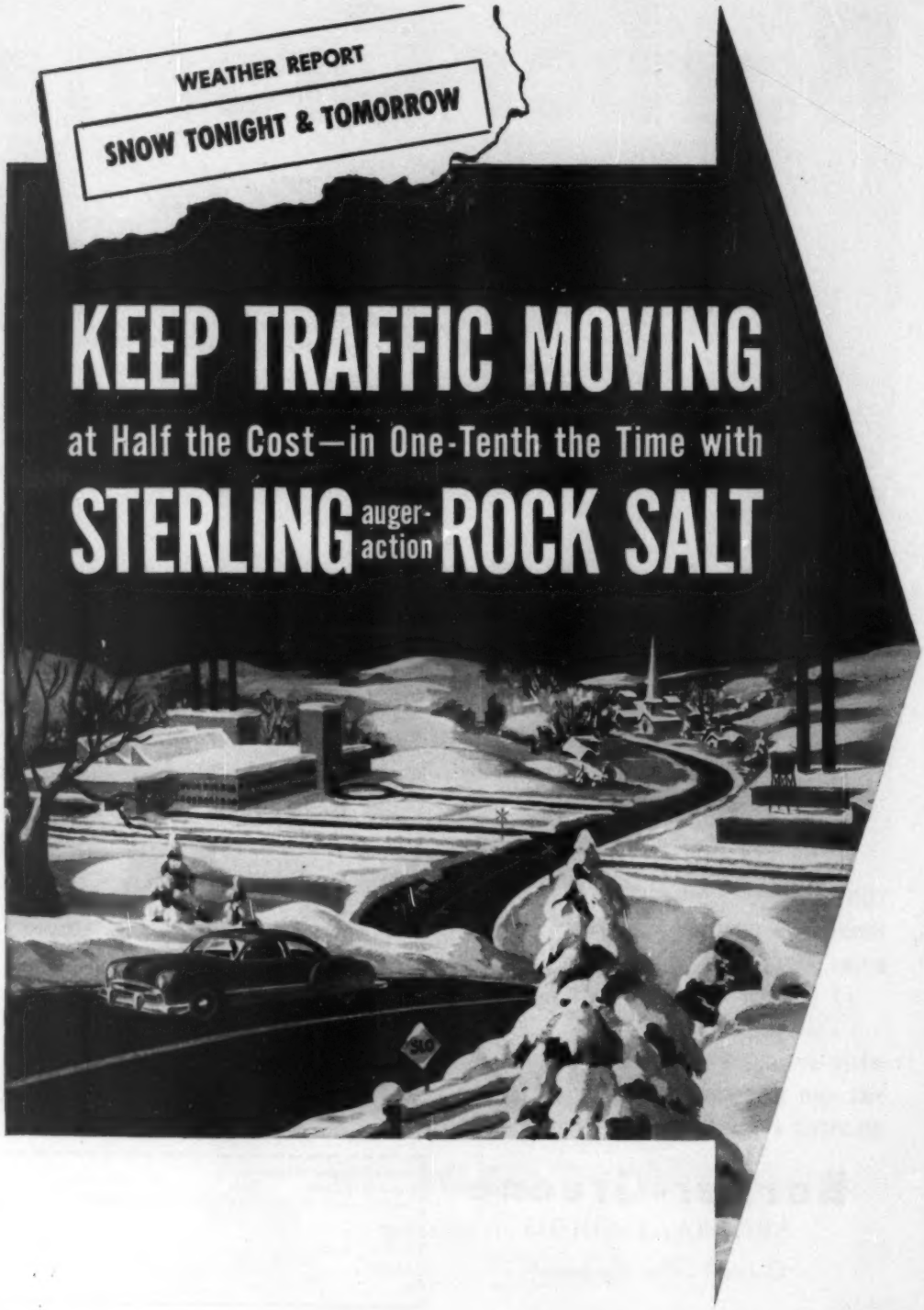
WEATHER REPORT
SNOW TONIGHT & TOMORROW
KEEP TRAFFIC MOVING
at Half the Cost—in One-Tenth the Time with
STERLING auger-action ROCK SALT

How one snow-belt county saved time and money with Sterling AUGER-ACTION Rock Salt

Comparative costs of protecting icy highways with treated sand and rock salt

SAND MIXED WITH ROCK SALT:

Royalty	$ .10
Loading	.25
Haul, 5 miles at 8¢	.40
Piling with bulldozer	.15
Treating with salt at 50 lbs. per cu. yd.	.48
Reloading at time of storm	.25
Average haul, 10 miles at 8¢	.80
Spread	.10
Total cost per cu. yd.	**$ 2.53**
Use of 3 cu. yd. per mile at $2.53	**7.59**

STRAIGHT ROCK SALT:

CC Grade Rock Salt: (400 lb. per mile, computed for 5-ton load)

5 tons of bulk salt at $12.95 per ton	$64.75
Loading, 5 tons at 25¢ per ton	1.25
Average haul (30 miles at 8¢ per ton-mile) 5 tons	12.00
Spread (mechanical) 5 tons at $1.00	5.00
	$83.00
$83.00/5 ton ..... per ton =	**16.60**
$83.00/25 miles ..... per mile =	**3.32**

UNIT SAVINGS:

$7.59 cost per mile with treated sand

$3.32 cost per mile with Sterling Rock Salt

$4.27 SAVING PER MILE EACH ICING IN FAVOR OF ROCK SALT

Mileage of state highways = 216 miles

ESTIMATED SAVING EACH STORM =

216 x $4.27 ..... $922.32

A BARE Pavement is the only SAFE Pavement!

And Sterling Auger-Action Rock Salt gives you "bare" pavements. For each coarse rock salt crystal bores through ice and snow right down to the pavement. Here it becomes brine. And this brine spreads out and breaks the bond between the road surface and the ice. Heavy traffic spots treated with coarse Sterling Auger-Action Rock Salt clear themselves with the passage of vehicles. Less traveled areas can be cleared with one pass of the plow or scraper.

Result: at far less cost, in far less time—you get *bare* pavements—the *only* safe pavements.

Get Ready for a Safer Winter

Comes in carloads, bulk, or 100-lb. bags. *Order NOW!*

STERLING AUGER-ACTION ROCK SALT

INTERNATIONAL SALT COMPANY, INC., SCRANTON 3, PA.

A FASTER WAY TO TAKE THE *SKI* OUT OF *SKID*!

ANTHONY COMPANY

SUPER SPEED

CINDER SPREADER

Engineered and developed especially for
• ICE CONTROL • DUST CONTROL
• CHIP and SEAL COATING

A rugged, heavy duty spreader for continuous, spot or intermittent spreading of cinders, sand or calcium chloride. Twin "tiltable" spinners with deflectors spread uniformly right or left or both sides and ahead of rear wheels for traction.

Now is the time to get "complete specifications." Send us your specifications for prompt quotation. Write Anthony Company, Streator, Ill., address Dept. AC100.

ADJUSTABLE DEFLECTORS control spread of material. Twin spinners "tiltable" to adjust material concentration and width of spread.

OIL SEALED CLUTCH gives positive instant control. Sealed in oil, protected against dirt and water.

SELECTIVE 3 SPEED TRANSMISSION—Variable speeds and feeds at the "flip of the wrist."

ALSO AVAILABLE WITH GAS ENGINE DRIVE

ANTHONY COMPANY STREATOR ILLINOIS

THE *Dualtronic* COMBINATION PIPE LOCATOR and LEAK DETECTOR

Since first introduced, the "Dualtronic", has met with instant success with Municipalities and Utilities throughout the world, because of the time and labor savings effected by one instrument doing the work of two so efficiently and effectively. Ruggedly built! Lightweight! One man operation! The "Dualtronic", is the answer on how to cut costs 50%!

Proven Ability!

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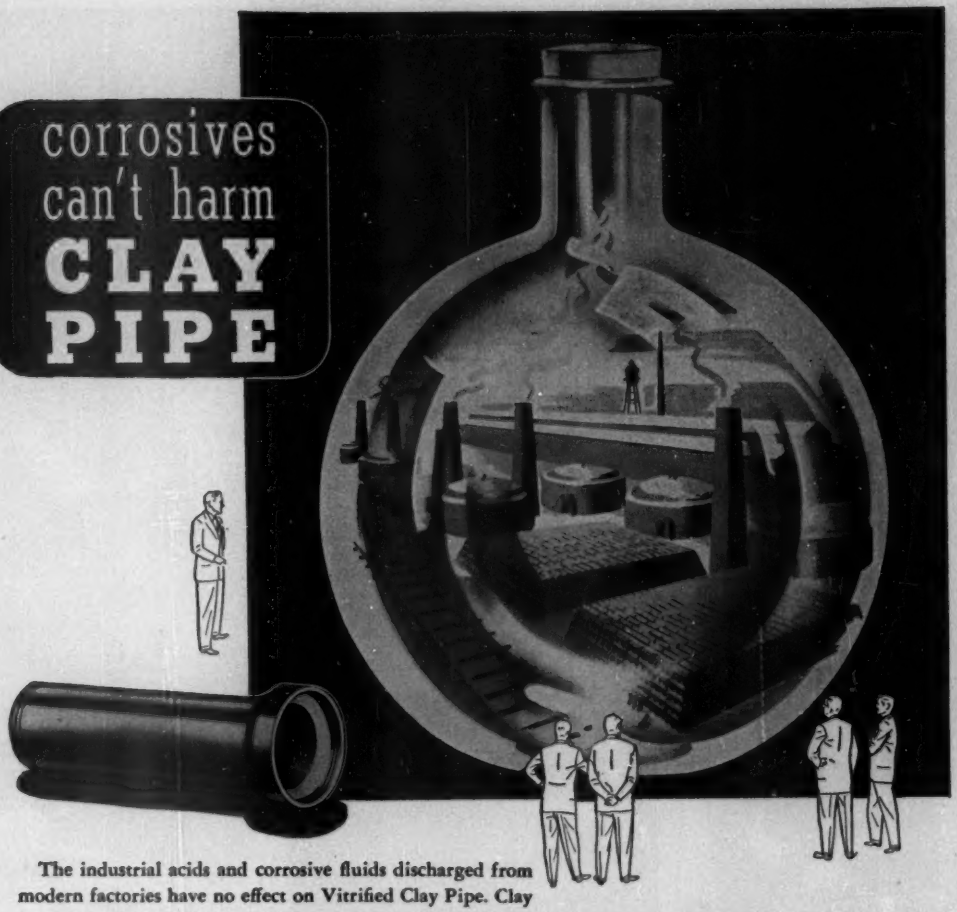

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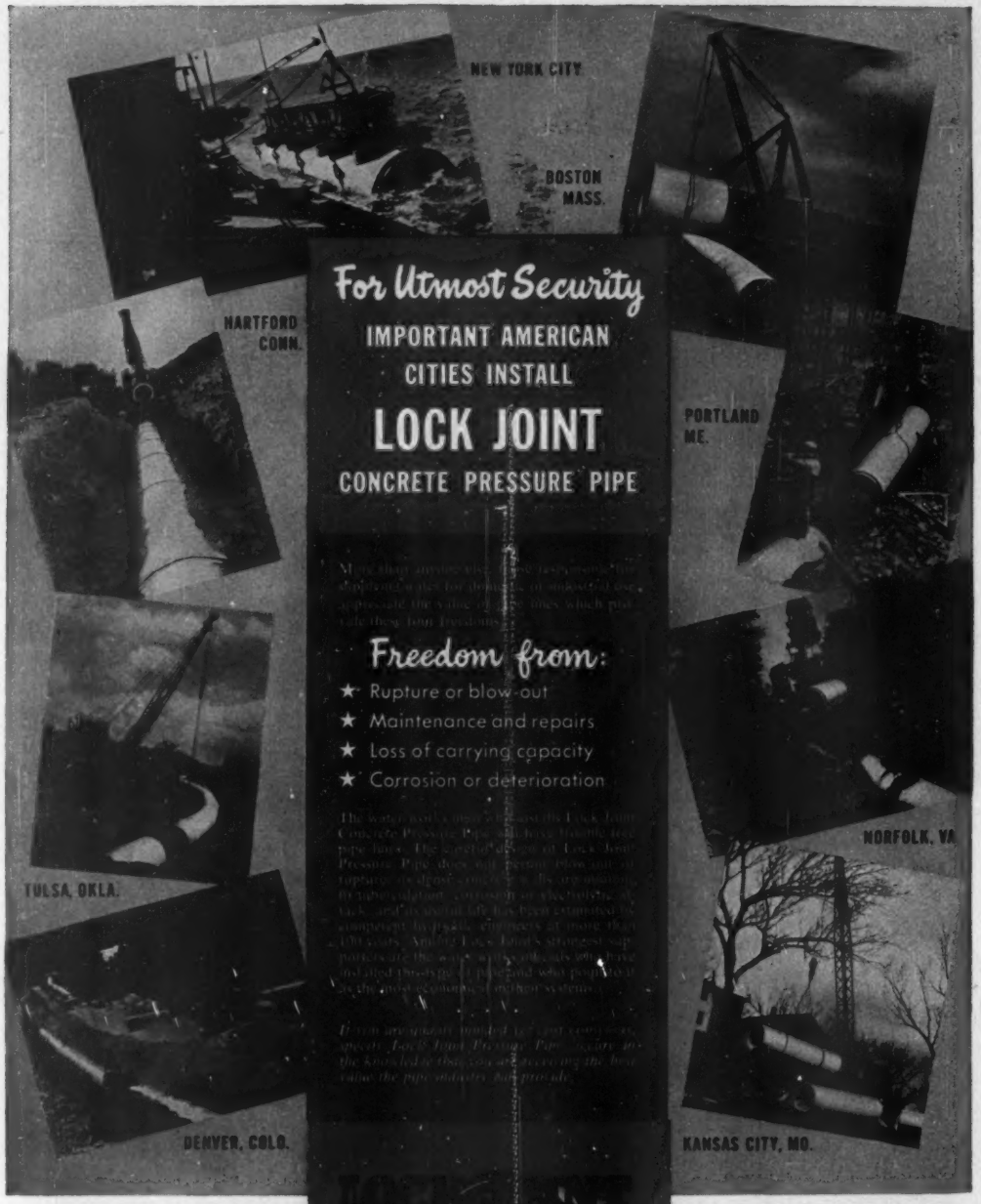

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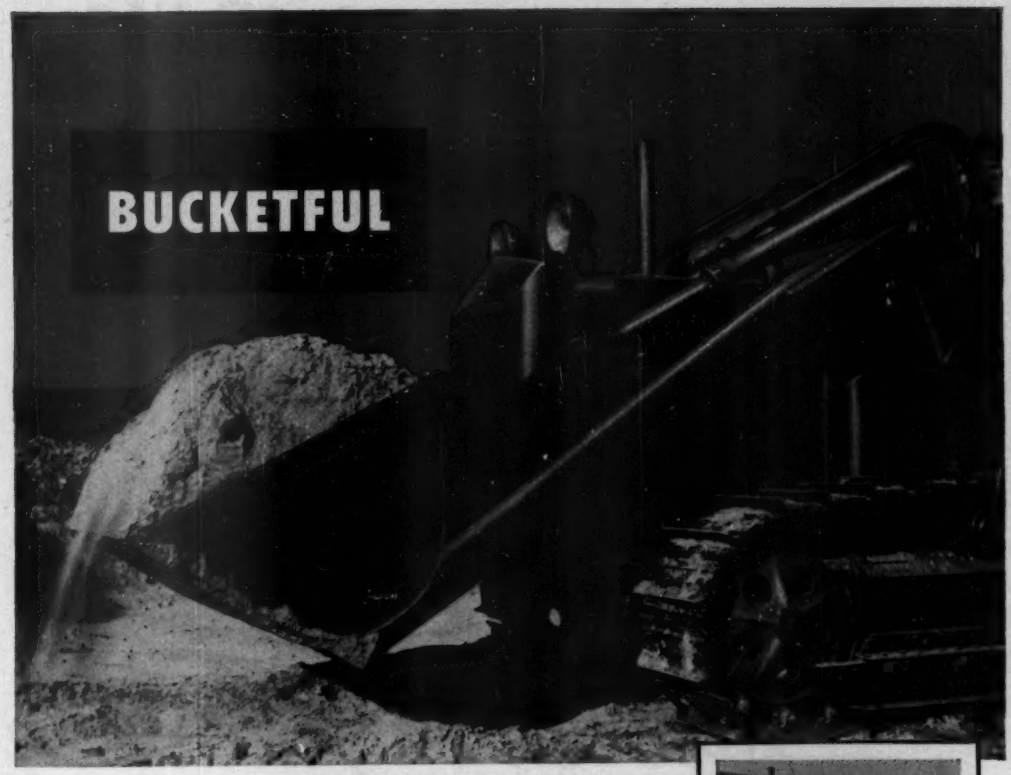

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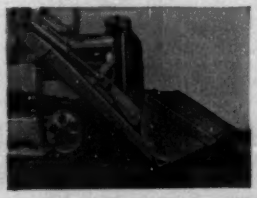

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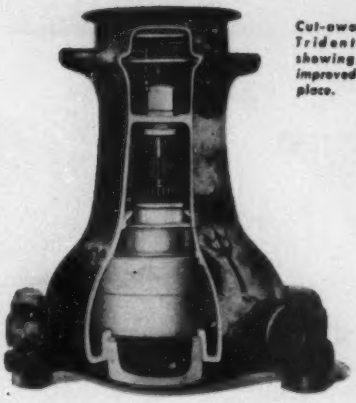

Cut-away 1898 *Trident Meter* showing today's *improved parts in place.*

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230

A simple testing laboratory, such as this one in Beaumont, Texas, takes much of the guesswork out of street construction.

SOME ELEMENTS OF

Street Construction and Maintenance

Part I

How streets function, what types of streets we have, and how to make the subgrade strong

By WILLIAM S. FOSTER
Engineering Editor
The American City

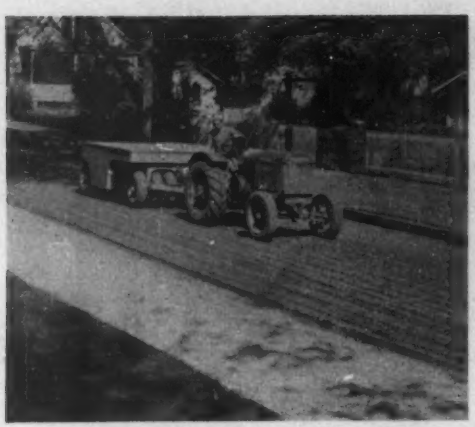
ALL people admire our great highway systems—the dramatic concrete and asphalt ribbons that lace our land together. Yet most casually shrug off our urban streets. Citizens seem to feel that since urban mileage is less than 10% of the nation's highway system, it makes it unimportant. They seem unmoved by the fact that urban streets carry a formidable 50% of the total automotive traffic, and that they are burdened to the point of helplessness by the congestion that this traffic load produces.

This series will discuss the underprivileged 10% of our nation's highway system. It will present and analyze design, construction, and maintenance practices where traffic loads have been heavy and funds skimpy.

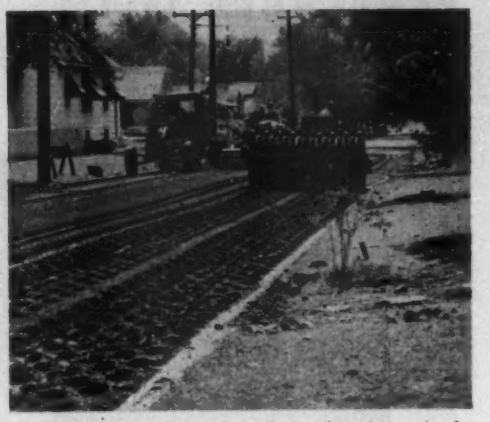
Rural highways are important. They form one of the ties that hold the cities together so that they can form a great nation. Equally so, urban streets are important; they make it possible for cities to live and function. By and large, traffic on rural highways is directed toward the nearest city. How much rural-highway traffic by-passes the nearest city? Less than 10%, the United States Bureau of Public Roads tells us, if the city has more than 300,000 people. Less than 20%, if its population ranges from 10,000 to 300,000. And only 50%, even for small villages of less than 2,500 people.[1]

How Streets Function

Before deciding how to build and maintain streets, we first should determine what their duties are. There are two, and G. Donald Kennedy, consulting engineer and assistant to the president of the Portland Cement Associa-



The rubber-tired roller has become an increasingly popular technique for obtaining good results in compaction.



The sheep's-foot roller at work in the picture is designed to impart a tamping action to the roadbed soil.

tion, outlines them for use as follows:

1. They must provide access and direct service to local property.
2. They must move large volumes of traffic from one section of the city to the other.[2]

These obviously are basically different duties. A city should try at all times to design its street systems so that the streets will not have to perform both these duties at once. It cannot always succeed.

Types of Streets

Often such simple groupings are not enough. The Chicago Plan Commission lists streets in four categories. These are:

1. *Major*—spaced one mile apart. These should have 100-foot right-of-way, a 74-foot roadway, and should carry six to eight lanes of traffic. Parking should be prohibited; and the streets contain infrequent points of access. Thus, they fit Class 2, shown above.

2. *Secondary*—will carry four lanes of traffic and allow limited parking. These should have an 80-foot right-of-way and at least a 36-foot roadway. Here we see combined Mr. Kennedy's classifications 1 and 2.

3. *Residential*—will have a 60-foot right-of-way, a 36-foot roadway, and allow short-time parking. In other words, a Class 1 type of street.

4. *Cul-de-sac*—should have 50-foot right-of-way, 25-foot street width, and allow parking on one side only.[3]

The classification of streets gives guidance for their support. W. L. Chilcote, Deputy Highway Engineer, Baltimore, Md., catalogs the financial responsibility for streets in this way:

Major — includes expressways, arterial highways, main thoroughfares, bridges, and grade separations. These are capital facilities and form an asset to the entire city, and, therefore, should not be financed by assessments against abutting property.

Minor—streets found usually in residential areas. At least half, if not all, the cost of their improvement should be carried by assessment against abutting property.

Alleys—used for the health and convenience of the property owner who properly should carry all the expense of their construction.

Maintenance—is rightfully a public obligation.[4]

When one builds a major or arterial street, he builds a capital structure that requires all the detailed attention that any other capital improvement should command. Residential streets, not required to carry the same intense traffic load, often can be built safely and economically to more generalized rules. We find, for example, that the Federal Housing Authority makes recommendations for areas with apartment and row houses and for neighborhoods with single-family homes. Its specifications may be summarized roughly as follows:

Apartment and Row Houses—should be served by streets with a 60-foot right-of-way and a 36-foot roadway. The streets should be flanked by 5-foot sidewalks 4 inches thick, except at driveways where the walks should be increased to 6 inches. Street trees should be 50 feet apart or in natural groups.

Single-Family Houses—on heavily traveled streets should have a 60-foot right-of-way with a 36-foot pavement; on minor streets, should have a 50-foot right-of-way with the same width of pavement, and on dead-end streets, should have a 40-foot right-of-way with a 26-foot pavement. All dead-end streets should be built to a cul-de-sac design with the terminal circle having 100-foot diameter right-of-way. The roadway circle should be 80 feet, outside curb to curb.[5]

For a specific example of an individual city, we can turn to Northampton, Mass. By action of the City Planning Commission, certain minimum standards have been set for streets in new developments.

Street widths, for example, must be 50 feet. On principal streets, if the board believes that traffic warrants it, a width as great as 80 feet may be required. Street grades have been set at 0.5% for a minimum and 6% for a maximum on primary street, and 12% for a maximum on secondary streets.

Street curvatures have been set for a minimum radius at the center-line of 100 feet. On a 24-foot roadway, this provides a sight difference of 100 feet. At street intersections, the requirements call for curb radius of not less than 20 feet.

On dead-end streets, turn-arounds or cul-de-sacs are required. These must have an inner, grassed circle of 26-foot radius, a 15-foot roadway, and a 4-foot walk. This design will allow a snow plow to make the turn without difficulty.

Northampton also requires that cross streets should be constructed at intervals of not more than 600 feet nor less than 400 feet.[6]

Street Subgrades

Virtually all engineers today agree that no street or highway is better than its subgrade. Experience has shown rather coldly that no matter how strong the pavement itself is, if the subgrade supporting it becomes weak, the persisting stresses of traffic will break it down.

In most cases, the city engineer has less opportunity for large-scale soil analysis than does the engineer on highway construction. However, he has the advantage of closer contact with local soil conditions, and if he combines this knowledge with simple soil tests he

will be well informed about the subgrade where he plans his pavement.

In order for a subgrade to carry a load, it first must be compact. Soil engineers, therefore, have adopted the policy of measuring compaction in terms of maximum density at optimum moisture content. Maximum density, as applied to the compaction of soils and similar materials, means the greatest density obtainable from the material passing a ¾-inch sieve when it is compacted in the manner familiarly known as the "Proctor" test (American Association of State Highway Officials, Designation T 99-49). Optimum moisture is the moisture content in the soil at the maximum density determined by this test. To conduct the test, one uses a cylindrical metal mold with a capacity of 1/30 cubic foot and an internal diameter of 4 inches. This mold has a detachable collar about 2½ inches high; the mold itself can be fastened firmly to a detachable base plate.

The operator takes, roughly, a 6-pound sample and compacts as much of it as he can into the mold in three layers, using a 5½-pound rammer with a 2-inch-diameter circular face. Each layer receives 25 blows from the rammer dropping free from a 12-inch height. The operator then removes the 2½-inch collar, and trims the top of the cylinder so that it is absolutely level. He then weighs the cylinder and sample, and, knowing the weight of the cylinder, he can determine the weight of the sample. The weight, multiplied by 30, gives the weight per cubic foot. He then takes a portion of the sample, dries it, and thereby determines its moisture content. This enables him to determine the dry weight per cubic foot of the sample.

The operator then takes the remainder of the specimen, combines it with the material from the mold, adds water, mixes it, and repeats the test. He continues the determinations until the soil becomes very wet or the weight per cubic foot shows a substantial decrease, caused by the water's displacing the heavier soil particles. The greatest unit weight is the figure engineers use for making their specifications.

Compaction

The subgrade specifications may require that the soil be rolled until its density is equal to this maximum figure, or comes within some percent of it. This should be recognized as a minimum compaction figure; unfortunately, some consider it as a type of maximum limit. There actually is no direct relation between the bearing power of the soil and the soil's optimum density. But experience has shown that the control that the "Proctor" test provides gives improved results.

This attention to soil compaction has resulted in the development of many types of rollers. Examples are the sheep's-foot roller, the rubber-tired roller, the disc roller, as well as the steel-tired roller. The so-called sheep's-foot roller is intended to give a tamping action. The sheep's-foot roller is one of the most spectacular pieces of rolling equipment available, yet it is one whose operation is subject to much controversy. The small area of the "feet" in comparison to the size of the drum of the roller, gives high unit pressures. It seems to work best on fine-grained soils. However, the roller must make several passes to cover the ground thoroughly, and its tamper-like feet do not give a smooth surface to the ground.

New Rubber-Tired Vibrating Rollers

New in the field are various types of rubber-tired vibrating rollers. They can weigh 60,000 pounds or more and they impart an impact to the fill through their unusual design. At the 1948 American Road Builders' Association conference, this roller was reported to be able to produce a 3-10% increase in density of filled material and to produce specified density in half the time than other types of rollers take. One of these rollers vibrates at the rate of 700 to 1,400 per minute. The effect is indicated to a depth of three feet; the roller seems most effective with granular material.[1]

Frost Action and Moisture

Excess moisture is another enemy of subgrade strength. It often requires attention as an individual problem, though it means merely that the moisture must be drained away. In Columbus, Nebr., when the water table rose to too great a height, City Engineer Bruce Gilmore backfilled with 6 inches of gravel and placed a concrete pavement on the gravel base.

But even more difficult is the frost action that this moisture can cause. In general, it can be expected in fine-grained soils capable of holding a high percentage of water. In most cases, frost heaving can be eliminated by removing the fine-grained material and replacing it with coarse. The depth of replacement should be about three-fourths the depth of frost penetration.

However, this method frequently is relatively expensive. As an alternate, studies at Purdue University have indicated that frost heaving can be eliminated by spreading calcium chloride

(*Continued on page* 176)

Subgrade drains are occasionally used to remove excess moisture, as in Baltimore, Md., where this photograph was taken; there an Armco Spiraweld pipe was placed in the trench, which was backfilled with coarse gravel.

10 Mgd for 10 Years

Well system and softening plant fill the gap at Columbus, Ohio, until master plan is completed

By PAUL C. LAUX, *Superintendent*
and
MARSHALL HOUGHN, *Assistant Superintendent*
Division of Water
Columbus, Ohio

A NEW water-supply and softening plant in Columbus corrects temporarily a lack of capacity that will be corrected permanently when the Big Walnut Creek project finally comes into its own. At present, the system is served in this area by two booster stations fed by the same line from the Scioto River pumping station. During periods of heavy pumping, this line does not have sufficient capacity to supply suction for both stations. Consequently, the city developed an additional source of supply to ease the demand on the main pumping station.

This new supply, known as the Nelson Road Plant, had to be built as economically as possible because of its temporary character and its intermittent use. Its cost, for pumping capacity able to handle 10 mgd and for softening capacity of 8 mgd, ran as follows:

Wells, pumps, motors, and mains..	$78,500
High-duty pumps and connections to the distribution system.....	12,000
Softening plant	335,500
Total	$426,000

The plant draws water from four gravel-packed wells which average 100 feet in depth and extend through approximately 50 feet of gravel. The combined yield of these four wells is around 10 mgd, and the average hardness of the well water is 525 ppm. The Layne Ohio Company, of Columbus, furnished and installed the wells and pumps. The four pumps are Layne vertical turbine pumps of 2 mgd each. Each well is equipped with 50 feet of 26-inch-diameter Everdur bronze screen, around which a silica gravel pack is installed through a 38-inch-diameter surface casing. About 45 tons of gravel are used in each well.

Lime soda-ash treatment provides the softening. The hard well water, 525 ppm, is reduced in the softening process to approximately 70 ppm.

The well water is delivered to two steel mixing tanks having a total capacity of 170,000 gallons, or 30 minutes retention at an 8-mgd rate. The basins operate in series and the chemicals are applied to the water as it enters the first mixing tanks. The water and chemicals are mixed by steel-plate paddles hanging from a horizontal cross member driven by a vertical shaft.

Pebble lime is received at the plant by truck and is conveyed to a 30-ton storage bin directly over an Omega Machine Company gravimetric feeder and slaker by a Jeffrey bucket elevator.

Soda ash is received in 100-pound bags and stored on racks that are moved to the soda ash elevator by a Barrett Cravens Company hand-operated hydraulic-lift truck. From the Omega volumetric feeder, the soda ash solution flows into a constant-level dilution box from which the soda ash solution is pumped by a Weinman centrifugal pump direct to the first mixing tank.

The lime slurry from the Omega gravimetric feeder and slaker, and the returned sludge from the settling basin, flow into a constant-level solution box from which this combination is pumped by an A. R. Wilfley & Sons sand pump to the first mixing basin.

Calgon is pumped into the filter discharge line by a Proportioneer's solution feeder with a capacity of 8 gallons per hour.

Clarifier

The chemically dosed and mixed water travels to a 140-foot-diameter steel clarifier with a capacity of 1,700,000 gallons. The clarifier provides 5 hours of settling time at the design capacity. The clarifier is equipped with Hardinge sludge-removal mechanism, which discharges the sludge from the center bottom of the clarifier to a sludge-control box located inside of the main building. The sludge box contains a tilting dividing device arranged so that all the sludge may be discharged to the creek, sludge beds, or to a sanitary sewer, or any desired amount of sludge may be returned to the mixing basin. Sufficient sludge is returned to the mixing basins

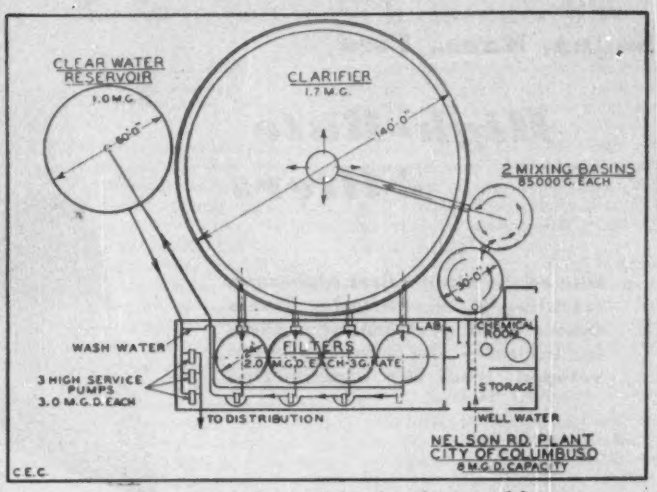
An Everdur metal screen is lowered into one of four gravel-packed wells.

The Nelson Road water-supply and softening plant, placed in operation in June of last year. The million-gallon clear-water reservoir is in the rear.

to maintain a suspended-solids concentration of 10% by volume after 30 minutes of settling time.

Solid carbon dioxide (dry ice) is used for recarbonation. The dry ice is stored in 1,000-pound pressure cylinders furnished by the Pure Carbonic Company, a division of Air Reduction Company, Inc. The ice liquefies and then gasifies as it is used. It is measured through a rotameter, and is introduced into the water in a portion of the collecting trough in the clarifiers by specially made cloth diffusers furnished by the Cardox Corporation. Since pure carbon dioxide is used, only a small volume of gas must be handled.

The water flows from the clarifier trough through separate pipes to each of the four filters. Each steel filter has a capacity of 2 mgd at 3 gallons per square foot per minute. No trouble is experienced at this rate. This reduces the size of the filters materially and cuts costs proportionately. The underdrain system consists of perforated-pipe laterals embedded in a cemented gravel bottom 16 inches in depth, upon which is placed the filter sand. The gravel bottom consists of one part Portland cement and nine parts of graded gravel.



The water-softening plant is designed to this general layout.

Filter Pumps

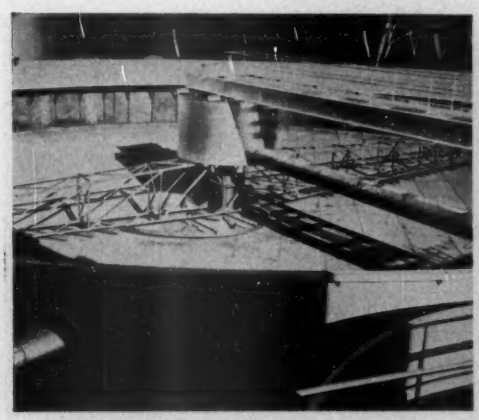
Filter pumps, taking suction from the manifold of the filter underdrain system, are used instead of controllers. The filtered water is pumped by four 1,400-gpm, 30-hp Weinman motor-driven centrifugal pumps up through a 24-inch standpipe to the top of a 1,000,000-gallon clear-well reservoir. The purpose of the standpipe is to provide a constant head on the filter pumps, thus providing an almost constant filtering rate. A Rennselaer check valve in the discharge of each pump provides an automatic effluent shut-off when a filter pump is stopped. This is because the head in the standpipe is always greater than the head in the reservoir. The difference in head closes the check valve and thus eliminates a hydraulic effluent valve.

The clear-water storage tank, built above ground level, is 50 feet high and 60 feet in diameter. The tank was built above ground for economy in construction and to reduce the lift on the high-service pumps. By maintaining a high level in the clear-water tank, practically all pumping head is recovered.

High-service pumping is provided by three Weinman 2,100-gpm, 125-hp motor-driven centrifugal pumps, operating with positive suction from the clear-water reservoir against 180 feet of discharge head directly into the distribution system. A Rennselaer check valve is provided in the discharge of each of these pumps.

The Nelson Road Plant was first proposed by the late Clarence B. and Charles P. Hoover, superintendent and chief chemist respectively.

The preparation of plans and specifications, and the rebuilding of the plant, were completed in less than 15 months. The plant was placed in operation in June 1950. Plans, specifications, and the supervision of construction were handled by Marshall Houghn and Chester E. Crist, Columbus Water Department engineers.



The Hardinge clarifier is 140 feet in diameter, gives 5 hours of settling time, and removes most of the sludge.

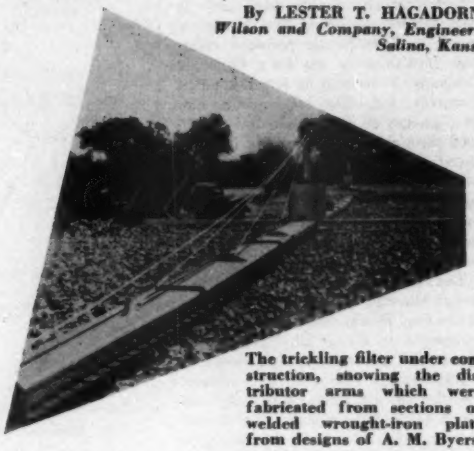
The filter gallery contains four 2-mgd, 30-hp Weinman filter pumps, which are used in place of controllers.

Salina, Kans., Uses

High-Rate Filters

One of the state's first high-rate, trickling-filter sewage plants shows good performance. Fishing facilities and a park are developed from the construction

By LESTER T. HAGADORN
Wilson and Company, Engineers
Salina, Kans.



The trickling filter under construction, showing the distributor arms which were fabricated from sections of welded wrought-iron plate from designs of A. M. Byers.

WHAT is to be done when one operates a sewage-treatment plant that removes only 15% of the system's polluting material? Or when the resulting sewage, carrying 85% of the water-borne filth of a city, shows definite evidence of fouling the stream and damaging it for those who want to use it? The time has then come to consider some changes.

Salina, Kans., found itself in such a situation in 1947. Its plant, which provided primary settling, was built in 1927. It had endeavored to treat the wastes from this growing city and found itself fighting a losing battle. The Kansas Board of Health was concerned with the problem, as well as the city's downstream neighbors. The City Council was dissatisfied when it had an opportunity to review the actual purification efficiencies. Consequently, it decided to correct conditions, and my firm had the privilege of being retained by the city to design the corrective features.

Degree of Treatment

Of course, when a city's population and industry grow larger and the receiving stream remains the same, the waste-purification required must be more thorough. The Smoky Hill River must receive the treated sewage. Its minimum flow is approximately 45 cubic feet per second. On consultation with the State Board of Health, we agreed that a treatment that would provide 85% reduction in the BOD count of the sewage would give the stream adequate protection. The plant is designed to serve a population of 30,000 people.

Before going into the construction of the new works, it would be interesting to review very briefly the capacity of the old plant, since it shows how sanitation design has advanced in the last quarter-century. On the basis of present design standards, the plant was badly out of balance. In terms of domestic sewage only, the units were capable of providing for the following population:

Primary tanks	17,500	persons
Digester	12,000	"
Sludge beds	8,500	"

Equipment

We designed the new treatment plant to provide not only primary settling, but also secondary purification by means of high-rate trickling filters, using Dorr Company rotary distributors. We added two primary settling tanks 65 feet in diameter with Dorr mechanical sludge collectors; one new digester, 57 feet in diameter with a Dorr heat exchanger to warm the sludge to its optimum digestion temperature, and stirring mechanism to encourage digestion. The existing digester is used as a secondary digestion tank and is not heated.

New Plant Features

The modern practice of warming the sludge by a heat exchanger before it goes to the digester, rather than putting the cold sludge into the digester to be warmed by coils, has given us both better performance and simpler operation.

The two high-rate trickling filters,

An airplane view of Salina's new sewage-treatment plant.

each 116½ feet in diameter, have a recirculation ratio at design flow of 1:1. Two 5,000-gpm Fairbanks-Morse angle-flow pumps feed the distributors. Two final clarifiers, each 115 feet in diameter with mechanical sludge collectors, provide final settled effluent and recirculated water for the trickling filters.

We selected high-rate, recirculating trickling filters, first, because the cost was lower, and, second, because of their simple and direct operation. The conventional filter is more trouble to build, more difficult to maintain, and its intermittent operation encourages annoying filter flies. The constant recirculation of a portion of the sewage through the filters gives the purification needed and any nuisances such as these will be avoided.

Fishing Pond

A borrow pit, adjacent to the plant, furnished earth fill needed around the units. This borrow pit was converted into a fishing pond for children and is now stocked with fish. Water required to maintain a constant water level in the pond is piped from the final effluent box. The pond will be fenced and separated from the treatment plant. The fishing will be supervised as part of the recreational program carried on by the city.

The sludge pumps are operated by automatic timers and so programmed that only one pump is in operation. This provides a minimum flow to the digesters and approaches continuous flow as nearly as practicable. The supernatant from the secondary digester flows into the bottom of a separate concrete box and overflows into a bell-mouthed fitting on the raw-sewage line to the primary tanks. This arrangement provides a continuous small flow of supernatant and, so far, has not affected the operation of the primary tanks.

Sludge Conveyors

The digested sludge will be dewatered on open drying beds. These beds will have a Link-Belt sludge conveyor with an 81-foot span for sludge removal from these beds.

The digestion tank was built of prestressed concrete which materially reduced the thickness of the digester walls. William S. Hewett of Minneapolis, Minn., designed the prestressing details. The plant uses digester gas in a boiler to heat the digester and the buildings.

The plant is one of the first in Kansas to use high-rate filters. Thus far, its performance has met all requirements for good purification, and the Smoky Hill River is no longer suffering from the water-borne wastes from Salina.

We Store Salt in an Incinerator Bin

By I. J. CASEY
Town Engineer
Irvington, N. J.

THE incinerator in Irvington, N. J., is probably the only one in the country used for both refuse-disposal and snow-removal work. Last summer we converted part of the incinerator to a salt storage bin.

Our incinerator was planned for bin-and-crane operation, but after two fires in the bin caused by spontaneous combustion, we decided to experiment with direct dumping on the large floor area so that we could load directly into hoppers of the furnaces with the crane.

Under this system, less maneuvering of trucks was necessary and, thus, a considerable saving in truck time was made. Because we work in shifts, there is some accumulation of refuse on the floor, but we dispose of it on the last shift and then broom and wash down the floor at the end of the final shift. The furnaces are cleaned at the end of each day, after which they are charged with dry material ready for starting the fires the next morning.

Our Street Superintendent, Frederick Scott, in desperate need of some dry area to store salt, suggested using part of the bin for this purpose, and submitted a design of a bin to store bulk salt. About one-third of the bin area was partitioned off with cement blocks, supported with beams, and the floor built up into a half-cone leading to the discharge hopper.

Now a truck of bulk salt can be driven to the loading floor of the incinerator and dumped directly into the bin. Trucks can back up to the hopper and be given a full load through a specially designed chute.

Greater Quantity

Formerly, we used bagged salt, and with two or three carloads stacked in our garage much useful space was taken up. The new hopper can hold as much as five carloads, which is more than half our usual requirement, and all will be under cover. The saving in the cost of the salt in bulk will be several dollars per ton, and, because of the ease of loading, more salt can be applied in a shorter time.

New York Life to Sponsor More Redevelopment in Chicago

SHOWN here is a sketch of two 12-story buildings with 238 apartments, which the New York Life Insurance Company has proposed to build in South Side Chicago. These are on a site adjacent to its mammoth development, previously announced, composed of two 23-story apartment structures with related development, including garden apartments, shopping center, etc. The Chicago Land Clearance Commission has assembled 82% of the 20-block area involved. The New York Life has plans to build three similar 12-story buildings in two adjoining blocks sometime in the future.

The Chicago Land Clearance Commission also has announced a plan to reclaim a 10-block, tax-delinquent "dead" subdivision on the Southwest Side for the construction of 160 one-family houses, and prospective redevelopment of a 50-acre blighted tract on the Near West Side for a light industrial center. These programs are under consideration by the City Council.

There are justified complaints . .

Water-Works Complaints

. . . and unjustified complaints

An inspector should never argue with a customer.

By RICHARD BENNETT
Civil Engineer
Phoenix, Ariz.

COMPLAINTS are valuable. They may indicate the loss of effectiveness and efficiency of the service rendered; they should be recognized and studied, not ignored.

Complaints reveal points of inadequate service. A proper analysis of their causes will prevent future trouble. Complaints require prompt action. A small truck kept ready at all times will give this service and also can help handle emergencies.

Complaints can work two ways: if a customer violates water-works rules and regulations, then the employee, discovering this fact, should fill out a complaint form indicating the violation, and send this to the complaint clerk for investigation assignment.

All complaints should be received at one central point and handled in four stages: (1) Receiving the complaint; (2) assignment of responsibility for investigation and correction; (3) follow-up, and (4) notification of correction.

Receiving Complaints

Whoever is designated to receive complaints should be supplied with complaint forms on which should be noted the time, date of receipt, nature, and origin of the complaint. If feasible, a full statement quoting the complaint verbatim should be recorded. The complaint should be answered by the person to whom it was referred. If this cannot be accomplished satisfactorily, the complaint should be assigned to someone else for further action, and the referral noted on the complaint form. A complete statement of findings, doings, and final disposition should be entered on the complaint form. Unfinished investigations should be arbitrarily followed up at five-day intervals.

When a complaint is received, it should be acknowledged immediately so as to give assurance that it will receive prompt attention. This helps improve public relations, as does courtesy and diplomacy in accepting the complaint.

Those handling complaints and special requests must be properly trained for the work. They must be well informed about the water works, its rules and policies, and possess a tactful nature.

When a customer complains, the inspector should state in detail, in the space provided on the form, who was at fault, and the action taken. If those to whom complaints are referred neglect to make a report, then at the end of five days they should be prodded to make an answer. Under some circumstances, more time is needed, and should be freely granted. The complainant should be notified that a delay is to be expected, and the reasons should be mentioned.

Investigators should never be permitted to argue with customers. Employee meetings should devote much time to training workers how to handle and deal with complainants—including cranks. The training should include not only what is to be said, but also how it is to be said.

Follow-Up

The complaint clerk must maintain a follow-up file of each complaint sent to employees for investigation. A plain 3-by-5-inch card index will be useful. It should show complaints at all times and record the date, number, the person it is referred to, follow-up and other information. This card can be filed under "Report Due Date," and thus all delayed reports automatically come to the clerk's attention.

A printed follow-up form then can be used that carries the following: date, number, and date due, and which contains the following printed information, "According to our records, no disposition has been made of the following complaint: ————. If more time is needed, please designate in the space below, including necessary comments, and return to ————."

If the complaint requires some work, then a work order should be issued. A copy should be kept as a follow-up that the matter has been settled and referred back to the complainant for final disposition.

Requests for special or extra service should not be refused, unless the request is entirely out of line with policy.

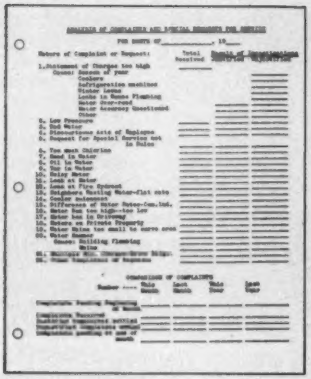
Responsibility for justified complaints should be ascertained. Employees do not like to have complaints sent in concerning their work, and the knowledge that every complaint is recorded, and requires a report from them, instills a desire to exercise care in their work at all times.

Duties of Inspectors

The complaint inspector should state specifically the reason for the complaint and whether or not the complaint was justified. He should note the action taken. After the complaint is settled, the inspector should secure the signature of the complainant in order to assure that the complaint has been settled to the satisfaction of the complainant. If continual complaints are received from householders in a given district, these complaints should be chalked up (with bulletin board notice) and those responsible reprimanded, or proper system changes be made. Generally, about 50% of the complaints are unjustifiable. Some unjustified complaints are due to lack of knowledge of rules and regulations.

Four simple printed forms usually used for handling complaints are the "Complaint or Special Request" form, the "Monthly Analysis" form, and two postcards. One postcard is sent to complainants notifying them that their request has been received and is being acted upon. The other postcard is provided to be sent to the complainant asking him to state if the complaint was settled satisfactorily.

Complaint forms are sometimes made in triplicate or quadruplicate with the various copies going to the investigator, file, manager, and employee. A special "complaint" and "request for service" form should be provided and all complaints or special requests should be noted on that form and investigated by



A typical complaint form that will adequately cover almost all problems.

an inspector. Special complaint forms, most often 8½ inches by 11 inches in size, are usually filled out in triplicate.

Usually, the form provides for the receiving clerk to make a complete statement and attach a letter; if more space is needed, he can use the back and additional sheets.

Spaces are also provided for noting special service requested. The bottom of the form should provide space for noting action taken and disposition of complaint, together with notation, "conditions complained of have been remedied" together with space for signature of inspector and complainant.

Immediately upon receipt of a complaint or request, the complaint clerk should send a postcard acknowledgment to the complainant that his request will receive prompt attention. Very little time is required to send this courtesy acknowledgement, and it creates good will for the water-works department.

Monthly Analysis

A monthly analysis should be made of all complaints received. "They should be classified as to division, reason for complaint, justified, unjustified, and whether justified complaints have been corrected. The monthly operation summary should contain an analysis of all complaints received during the month. It should be posted on the bulletin board to attract the interest of foremen and employees.

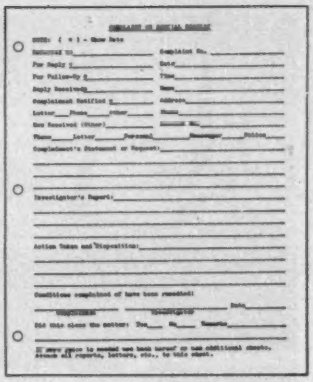
A suggested form of layout for the "Monthly Analysis" form is given. A few of the common forms of complaints are listed. Many extend this form to include all types of local complaints, which is to be recommended.

Customer Notification

The complainant should be notified either by telephone or letter of the disposition of his complaint. In handling complaints, it must always be remembered that the complainant is the most important factor in the case and therefore must be notified promptly of final disposition.

After the complaint is settled, some write a letter to the complainant, calling attention to the work and asking for suggestions and comments. They often enclose a return postcard for the convenience of the water user.

When the complaint receives final disposition, and the second and third



This monthly summary shows how the water system serves the townspeople.

copies are returned, a copy of the complaint and answer is given to the manager; the second copy is filed under the name of the person making the complaint, together with the written answer; and the third copy is placed in the master file for future reference and reports. All serial numbers on complaint forms should be accounted for periodically.

A spot location map should show the origin of all complaints to determine if they are well distributed, or come from small districts.

With a proper complaint, inspection, and analysis system, the manager will have a barometer of customer satisfaction with the water service and will be able to identify and eliminate the causes of complaints.

Too Many Water-Works Accidents

OF ALL utilities, water works have the greatest accident-frequency rate. Fortunately, the severity of these accidents is only moderate. This was one of the principal points brought out by Raymond J. Faust, Executive Assistant Secretary, American Water Works Association, when presenting the Committee Report on Safety Programs for Water Works at the recent annual meeting of the Association in Miami.

The report carried the results of the study of the National Safety Council. The "frequency of disabling injuries" is expressed in terms of accidents per each million man-hours. The "severity rate" is based on days lost per thousand hours of work. Figures for 1949 are as follows:

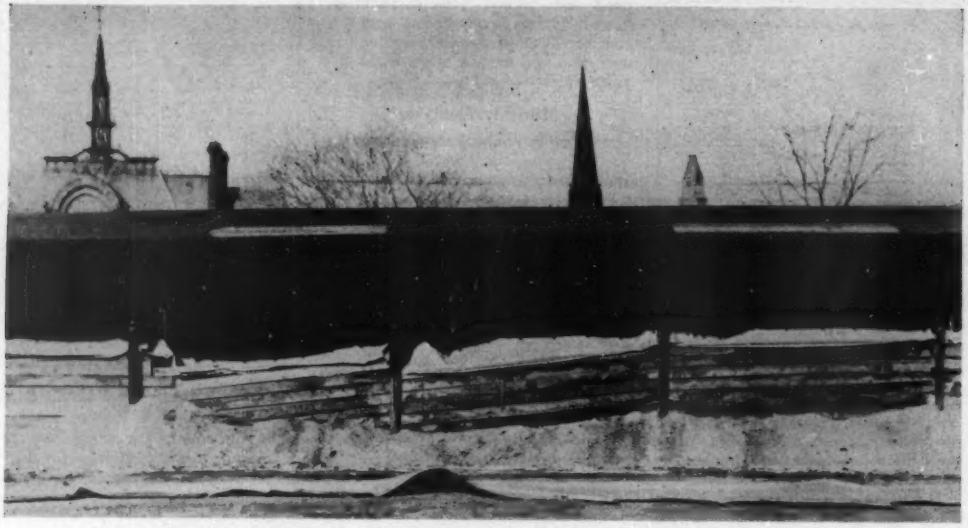
	Frequency Rate	*Severity Rate*
Communications	2	0.15
Electricity	14	2.57
Gas	17	0.99
Water	33	0.99

The frequency rate for all industry is 10.14; and the severity rate is 1.02. Forty-one states reported that they have some state agency dealing with labor and industry. Eighteen have safety codes. Eighteen admitted absence of a general building code. Five states have limited codes. None have codes specifically covering water construction or operation.

The water-works committee also sent questionnaires to 300 water utilities. Of these, 41% have active safety programs; 10% have a safety director; 40% have an employee who devotes part time to safety work; 26.5% have the services of a city safety director; 22.5% of the water utilities are members of the National Safety Council; 47% of the cities are members of this council; 81% reduced accidents by safety programs; 27% hold safety meetings regularly; 29% publish a safety bulletin regularly, and 53% of the publicly owned water supplies are under the state labor-department jurisdiction, as are an equal number of privately owned water supplies.

WATER WORKS ACCIDENTS

Population	*Accidents per Worker per Year*	*Ratio of Accidents to Employees per Year*
500,000 plus	0.076	1:13.2
100,000 to 500,000	0.147	1:6.8
30,000 to 100,000	0.210	1:4.8
10,000 to 30,000	0.125	1:8.0



In Hartford, Conn., semi-open sheds provide storage for the salt used in snow removal.

Cities Learn How to Store Rock Salt

Stock-piling methods developed so that rock salt is available for use all winter

This huge open stock-pile of coarse rock salt at the Detroit mine of the International Salt Company supplies surrounding communities during the winter.

BECAUSE rail transportation is slowed during and after heavy storms in the winter snow and ice season, and demand for coarse rock salt is heaviest then, many cities find it difficult to obtain it in supplies adequate to keep streets and highways open throughout such stormy periods.

Rock salt at the mines, no matter how much is available, does not help the user. To have it on the spot when needed, municipalities in recent seasons have begun storing it during July, August, and September, when supplies are plentiful.

Although some 10 different methods of storing coarse rock salt are now in use, one of the most popular and least expensive is the open storage pile. The International Salt Company, of Scranton, Pa., reports that last season several cities used this storage method to make sure they had enough rock salt in reserve to keep streets safe and snow-free at all times.

Open Storage

In Rochester, N. Y., for example, coarse rock salt was piled on the ground in the open and kept there all winter. Edward Nier, Commissioner of Public Works, detected no substantial loss of rock salt from the weather, nor did he notice any lumps in the salt as a result of moisture.

At its large Detroit mine, the International Salt Company stored coarse rock salt out of doors in a huge pile containing thousands of tons, without tarpaulin cover or any other protection

from the weather. During the winter this rock salt was used on the streets of Detroit and many surrounding communities.

Although open piles of this kind probably represent the easiest type of storage, many street and highway men have developed other methods that fit local conditions.

In New York City, where coarse rock salt is spread on more than 2,000 miles of streets during every snow and ice storm, the Department of Sanitation stores it in some 50 different strategic locations throughout the metropolitan area, using space in garages, city incinerators, and similar buildings. In some cases, the coarse rock salt is stored on the second floor of the buildings, near a loading chute, so that trucks can pull in on the ground floor for quick loading during storms.

Covered Storage in Hartford

In Hartford, Conn., where coarse rock salt keeps the streets completely clear of snow and ice, a supply big enough to take care of several storms is stored throughout the winter in sheds covered on top and on three sides, but open on the fourth. In East Orange, N. J., Theodore Young, City Engineer, rents a silo that is not used during the winter for part of his storage space.

When searching for space to store rock salt, most commissioners make a survey of their communities, looking for unused buildings or parts of buildings, such as garages, tool sheds, etc. In some cases, such space exists on city property unnoticed until a special check is made with storage requirements specifically in mind.

Tarpaulin Covers

In addition to the open-storage method, some rock salt is stored by being piled against the sides of buildings and covered with a tarpaulin fastened on top to the building wall and held down at the bottom with rocks. Like open storage, this combines low cost and ease of storage with maximum accessibility during storms. Besides keeping loose rock salt in this way throughout the winter, bags of rock salt may be piled on a platform built low to the ground or about three feet above it to facilitate loading into trucks, and covered with a tarpaulin to keep the bags dry.

In other communities, standard steel bins like those used by contractors for cement and gravel provide excellent storage space. The coarse rock salt is fed into the bin by a portable conveyor. During storms, trucks pull under the bin and are loaded by gravity flow.

Using material gathered from various street and highway commissioners and its own staff of research engineers, the International Salt Company, Inc., has published a pamphlet called "How to Provide Low Cost Rock Salt Storage." Besides outlining these methods and others, it contains important engineering data pertaining to the slope of chutes to facilitate free flow of rock salt, and the weight and volume of rock salt, thus enabling officials to estimate the amount of space that will be required for storage. Copies of the booklet may be omtained free by writing to the company in Scranton, Pa.

Significant Changes in Municipal Milk Sanitation

By JAMES A. TOBEY, *Dr. P. H.*

IN MORE than 700 American cities, the only grade of market milk now sold to the public is pasteurized milk. Somewhat over 400 of these municipalities now require by law that all milk, or all milk except the grade known as certified, must be properly pasteurized. In the rest of these 700 cities 100% pasteurization has been achieved on a voluntary basis, perhaps as the result of enlightened public opinion. Included among the municipalities now having compulsory pasteurization laws are about two-thirds of the 92 cities in this country with populations of 100,000 or more.

On July 1, 1950, the State of Minnesota put into effect the first really comprehensive law for state-wide pasteurization of milk, exempting only a few quarts produced strictly for home use. The State of Michigan, by an act of 1948, also requires pasteurization, but exempts from the provisions of the law, cities which vote otherwise by referendum. Half a dozen Michigan communities have elected to take their chances with the potentially dangerous raw milk which has been the source of so many disastrous epidemics in the past.

State-wide pasteurization of milk is now also required in Delaware by a State Board of Health regulation which took effect on November 1, 1950. Similar regulations are in force in Colorado, Nevada, and Utah.

The standard milk ordinance recommended by the United States Public Health Service was in effect in 1950—sometimes in modified form—in 1,468 municipalities and 367 counties and districts in 38 states and 1 territory. This ordinance, first proposed in 1923 and adopted that year in seven communities, is now in operation in areas with a total population in excess of 58,000,000, including 55 of our largest cities.*

Judicial sanction of this widely accepted model milk ordinance was given in a decision of the Supreme Court of the United States handed down on January 15, 1951. In this case, brought by the Dean Milk Company of Illinois against the City of Madison, Wis., the Supreme Court held that a provision of the city's milk ordinance requiring that all milk sold within the city must be pasteurized in plants located within a radius of five miles from the center of the city was invalid and unconstitutional as an unlawful interference with interstate commerce. The Court pointed out that the city could adopt as an alternative the Public Health Service ordinance which permits sale of milk from distant places provided that it is produced and pasteurized under conditions equivalent to the requirements of the ordinance. Three justices dissented from the majority opinion in this case.

Comprehensive Report Issued Last Year

A comprehensive report on sanitary milk and ice cream legislation in the United States was issued in July 1950 by the Committee on Milk Production, Distribution, and Quality of the National Research Council of Washington, D. C. This report, which summarizes and analyzes the legislation in the 48 states and in 84 of the larger cities which was in effect in 1949, demonstrates the lack of uniformity in this important sanitary legislation and indicates the urgent need for improvements in existing laws and for greater standardization of milk and ice cream sanitation practices in our states and cities.

A second phase of this investigation, which is supported by a grant of federal funds, is now under way. This significant study is concerned with the actual factors which promote the production of quality milk, and with the influence of actual administration and enforcement of existing milk laws on such quality. Out of this investigation may come cogent facts which will lead to better, more uniform, and perhaps more economical control of market milk supplies by our states and cities.

* The standard milk ordinance provides, among other matters, for pasteurized milk, but does not require it.

In the suburban community above, the uncontrolled spread of population has submerged community identity. But with intelligent planning and regard for adequate

space standards, the community shown above can still preserve its assets of well-defined community development and accessibility of open space to local residents.

Advice to a Suburban Area

By PAUL WINDELS, *President*
Regional Plan Association
New York, N. Y.

MOST suburban areas suffer from lack of a general sense of direction in guiding the growth of communities toward a permanently attractive result. Mistakes made now can be corrected only by the spending of vast sums of money over long periods of time. Therefore it is important to adhere to a few standards which are generally applicable to any county which lies directly in the path of metropolitan expansion.

In the large city, one concept which seems to be gaining increasing acceptance is that of the restoration of the neighborhood community. The idea is not a new one. It implies that in order to make the large city acceptable to people who seek to avoid being overwhelmed by it, there should be in some recognizable form a return within the city to neighborhood community life with its separate and distinctive interests, physical characteristics, and local facilities.

Preserve Community Identity

The major problem of most suburban areas, which still have separate local communities, is to avoid having them overwhelmed and submerged by an uncontrolled spread of population. The separate identities of local small communities should be preserved. Efficiency does not always come with size. Of supreme importance is the maintenance of public interest in the community, its problems and its government. To the degree that your local government is close to the people, to that same degree will you sustain local public interest and local pride.

It becomes increasingly evident that large cities have now become so big and complicated as to be beyond the grasp of their citizens, who in turn are so far removed from direct and personal contact with them that public interest in their problems has been lost.

Maintain the separate identities of your small communities by keeping them physically separate in distinctive ways. This you can do by the use of arterial highways, recreational areas, and other similar uses. Except for essential county-wide needs, correlate your public improvements as much as you can with reference to your local communities, so that they do not outgrow comfortable size and do not become too congested.

Adequate Space Equally Important

Closely related is one other standard which must be emphasized as being of almost equal importance. It underlies all intelligent planning. It is the simple, easily understood standard of adequate space. Lack of adequate space, with its resulting congestion, is the source of much of our present-day difficulties in metropolitan areas. Intolerable congestion makes life in the city expensive, difficult, uncomfortable, and inefficient. It would seem utterly ridiculous to repeat this mistake in suburban areas.

Overdeveloped sections may become your blighted areas of the future. Crowded subdivisions bring in their train excessive financial burdens on the community of which the overdeveloped section does not and never can bear its fair share. From this comes the pressure to overtax the more substantial types of housing, making them in turn uneconomic in operation, and leads to still further community problems. It also puts the pressure on you to bring into the community other types of land use in order to provide tax income, the presence of which, however, may repeat the very physical conditions from which people seek to escape when they leave the city and come here to live.

While there are many arguments in favor of encouraging in your area the location of business offices and industrial plants, that question should not be decided under the pressure of need for additional tax income resulting from overdevelopment of land for housing. If you are not under the compulsion of such need, you can afford to be much more discriminating and careful in the type of business and industrial uses which you permit.

Light Industry Often an Asset

Heavy industry with its ugly buildings, tall chimneys defacing the landscape, its smoke, noise, excessively heavy trucking and many other unpleasant features would be a liability in many suburban areas. But, in addition to business offices of large enterprises such as insurance companies, wholesalers, and the like, who do not have to be in central cities, there are many forms of light industry such as precision manufacturing, publishing, research laboratories and other similar types which can be housed in attractive

buildings surrounded by landscaped grounds with adequate parking facilities. When properly located away from main arterial highways or parkways, they can be physical, economic, and financial assets.

You should aim constantly to increase the percentage of people who do not have to make that long daily journey to and from the central city. In most metropolitan areas, every person employed for non-local use requires the services of two additional persons in what may be classified as local service employment, such as store employees, school teachers and the many other types of service workers. By and large, if you have 1,000 workers in any given area employed in the first classification, you will find that approximately 2,000 additional workers are required to service the needs of the total group.

Traffic and Park Needs

Your traffic needs for the next several decades should be planned for now. If at all possible, at least the land for major highways and parkways should be assembled in advance of intensive development, lest at some later date you have to face the burden of excessive costs. Before such avenues of travel are built, there should be assurances that they will be protected by adequate zoning against improper commercial and industrial roadside uses. Allowing arterial highways to become local streets by overcrowding developments along them and then providing expensive by-passes of such areas of congestion is obviously wasteful.

In addition to large state and county park and recreation areas you must also be conscious of your need for local parks and playgrounds. One of the great failures of all growing communities is adequate anticipation of future recreational needs and provision for them by reservation of land before it is absorbed into the areas of building development. In some states, of course, developers can be required to deed over small park areas in new subdivisions.

County Planning Agencies Must Lead

County planning agencies must take affirmative leadership in the establishment of guiding principles. If a sense of direction for growth in a suburban area is not supplied by a county planning agency, it fails in its primary purpose.

Two paths are open before you and it is within your power to decide which of them you will follow. You may shut your eyes to the warnings to be found in the mistakes made by other counties. You may take the easy path and just let the spread of the central city roll over you, absorb you, and ultimately obliterate you by making you an indistinguishable part of its huge monolithic structure.

The other path is to develop new patterns of urban life in which the ideal f the constellation of many small, separate, attractive villages and towns, widely spaced and adequately serviced by county-wide facilities, will replace the conventional, solidly built, inefficient, congested, uncomfortable, and unattractive city patterns that took shape during the past century.

Landia, N. Y.—An Outstanding Community Plan

THE site plan for the new community of Landia, N. Y., which Levitt and Sons, Inc., planned to build during 1951 on Long Island but has postponed because of the war emergency, is an intelligent, realistic approach which could well be adapted for the new communities which will be built around huge new defense plants. The Levitt company will adapt the plan to any defense housing it builds.

Alfred Levitt designed Landia for neighborhood living because the builders of Long Island's famed Levittown have discovered people like to be identified with small neighborhoods. Landia's 1,750 homes are divided into seven neighborhoods ranging in size from 90 to 300 houses. Each neighborhood is surrounded by a circumferential drive which flows into the one through-street in the community, Landia Drive.

All of the community facilities—the four churches, the two public schools, the complete shopping center, the town hall and swimming pool, the railroad station and its 880-car paved parking field, the professional-size baseball field, and the 30-acre industrial site for light industries—the latter separated from the rest of the community by a shelter belt—are to be located on or just off Landia Drive. No community would be located on the drive.

Parks and playgrounds also are located along the drive—there is a playground or small park within 1,500 feet of every house. The only traffic light in the community would be located at the junction of Landia Drive and the Hicksville-Jericho Road, a cross-country road.

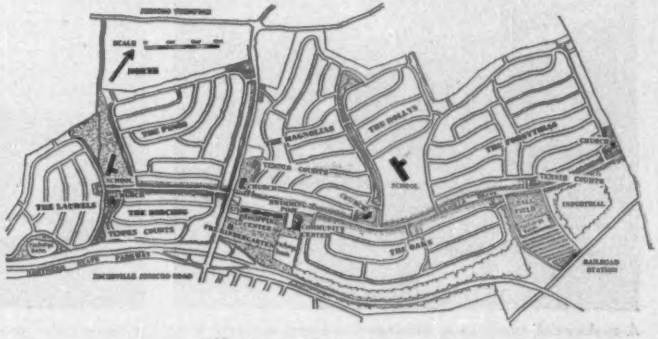
A stranger could easily find his way in Landia. Each neighborhood is named for the tree or shrub in which it is heavily planted—The Oaks, The Magnolias, The Forsythias. The circumferential road in The Magnolias, for example, would be Magnolia Drive and each street name in the Magnolia's would begin with the letter "M."

Ideally, the residents of Landia would work in the three plants in one corner of the community. Most Landia residents probably will commute to work in New York City. However, Landia's light industries would help spread the tax load.

The Landia house would have sold for $13,000 if built this year. It has three bedrooms, two baths, a two-car attached garage with utility room, an all-electric kitchen equipped with range, refrigerator, deep freeze, automatic clothes and dish washers, and a complete landscaping job on a lot at least 80 by 100 feet.

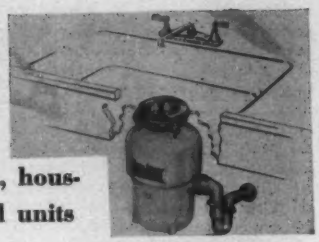
Ten per cent of the house's sales price represented joint ownership of such community facilities as the town hall, swimming pool, tennis courts, baseball field, parks and playgrounds, and the railroad station with its 880-car paved parking lot and 500-foot covered platform.

An article on the 16,000-home new "Levittown" to be built in Bucks County, Pa., will appear in the October issue.



Site plan showing Landia's neighborhoods and relation to community facilities.

No Garbage...



This Waste King Pulverator model shows how the grinders fit to the standard household sinks.

because the 7,200 homes in the Lakewood Park, Calif., housing development are equipped with food-waste disposal units

WHEN the builders of Lakewood Park — Aetna Construction, Inc., and Biltmore Homes, Inc. —acquired the 3,500-acre site located 12 miles from downtown Los Angeles, they envisioned the building of a community, including parks, playgrounds, schools, churches, and a major shopping center. More than 30,000 people already are living in the 7,200 homes (of a total of 17,150) that have been completed. There is a fact more than bigness, however, that puts this housing development among the pioneers. There is no garbage. The builder, by installing a kitchen grinder in every home, eliminated forever the insanitary, untidy, and troublesome accumulation and disposal of garbage that presents its age-old problem in conventional communities.

Why

Before the builders finally decided to provide their prospective purchasers with a garbage grinder in each kitchen, they subjected the method to the same type of scrutiny that they did to all other innovations incorporated in the community. For example, they wanted the answers to these questions:

1. Is the added cost of a grinder per home justified?
2. Will the addition materially benefit the entire community?
3. Will the garbage-grinder method give long-lasting service?

To answer the first question, a survey was conducted among prospective homeowners who would live in the community. The majority were enthusiastic. Federal and state housing authorities, and local banking and credit institutions who would issue the greater percentage of building loans, agreed that the addition of a garbage grinder would increase the value of the house.

For the answer to the second question, the Lakewood Park builders compiled an imposing array of opinions on the subject from authorities in the fields of community planning and public health. Here again the overwhelming consensus was for garbage grinders. For example, Dr. George Uhl, Health Officer of the City of Los Angeles, stated: "The electric garbage pulverator unit is speedily becoming recognized as the logical and sanitary method of eliminating garbage. Housewives are now able to assist medical science in its war against insanitary conditions by eliminating garbage from the home, thereby eliminating the greatest breeding place of all for the carriers of contagious disease."

Arthur Pickett, Deputy County Engineer of Los Angeles and originator of the Community-wide Garbage Grinder Plan, described by him in THE AMERICAN CITY for January 1951, stated that water carriage is the most logical vehicle for transporting garbage from the home to its final processing at the municipal sewage plant. Comparing the other methods of garbage disposal, Mr. Pickett concluded that modifications in the sewage plant because of the increase of organic material are more than justified from the standpoint of benefit to the community.

The survey also produced additional evidence that the home garbage-grinder method would be of benefit to the entire community. Women's clubs and civic organizations, which might be expected to establish branches in the planned community, agreed unanimously that the elimination of garbage trucks and garbage pails would aid immensely an organized effort to beautify the new city.

The third question, that of low service costs, was answered by the Given Manufacturing Company of Los Angeles, makers of the automatic Waste King Pulverator, which is installed in every one of these homes. The Given Company agreed to service the food-waste disposers and to show each homeowner the most efficient way to operate the appliance. A year's experience with

A residential street in a development approximately five miles from Lakewood Park. The cartons contain fibrous waste that would have gone easily through a grinder.

Compare this picture with the previous one! Lakewood Park homeowners have food-waste disposal units that are efficient and keep streets looking like this—garbage free.

these Pulverators shows a service factor of 0.8%.

Ultimately, it is expected that at Lakewood Park alone, an estimated 85,000 people will be enjoying the benefits of community-wide, garbage-free living. Not all cities can come into being in six months, as the first 7,000 units of Lakewood Park did. Not only are methods traditional but in most cities considerable apparatus has grown up around such services as garbage disposal. Nevertheless, the simple solution of the garbage problem by not letting food waste become garbage has the powerful lure of wholesomeness and logic. Food-waste disposers are one of the most talked-of innovations in municipal sanitation. Cities and towns all over the country are studying them with an eye to their adoption as a municipal policy. For a picture of how their cities will benefit, they can take a look at Lakewood Park, Calif.

Salesman's Know-How Available In a Defense Economy

By BENNETT S. CHAPPLE, Jr.
Assistant Executive Vice-President
United States Steel Company
Pittsburgh, Pa.

IN THE month of June more than 50% of the production of United States Steel was being distributed in accordance with government directives which include DO ratings, 11 certified programs, and the tonnage identified for shipment to converters and warehouses. United States Steel, therefore, has control over the distribution of less than 50% of its production. Furthermore, the impact of these governmental restrictions varies from product to product. Plates are most heavily hit, with shapes, pipe, and bars next. Least restricted, from the government's standpoint, have been sheets, and some of the tin-mill products.

In an attempt to balance this situation, the National Production Authority has ordered substantial reductions in the amount of steel which can be used in the manufacture of certain consumer goods such as automobiles and appliances. At the same time it has announced that CMP will be substituted for our present priority system effective July 1, although the third quarter generally is to be considered as a transitory period. Such steps, even though necessary, present a real problem, for our economy is like a fine watch, delicate in operation, which can be thrown out of adjustment by heavy-handed action. Only jewelers' know-how and precision instruments—not a rough-and-ready crowbar and sledgehammer approach—can successfully keep the watch running at all, even though for the moment it may not keep perfect time. The important point is that thinking *is* being done by men in an advisory capacity who are fully aware of marketing realities.

Our second problem concerns what we do *now* to keep our solicitation forces from dry rot. Most marketing men with whom I have talked in recent months are very justly concerned with the effect on their solicitation organizations of the prospective continuation of a sellers' market which has prevailed with minor exceptions for more than a decade. The new industrial capacities now being planned and built should write a final end to this abnormal situation within a year or two, provided that international relations do not further deteriorate. When this point is reached, we will, unfortunately, be confronted with the hitherto unparalleled condition wherein the better part of an entire generation of sales executives, managers, and salesmen have never had to get out and sell.

I believe that the only way to maintain the effectiveness and morale of a solicitation organization under these conditions *is* to get out and sell—to sell today the only thing of which we have an unlimited supply—service.

Under normal conditions, service, of course, as we all recognize, is a very important part of the selling game. In fact, we have come to learn that it is often the only lasting way successfully to differentiate between one's own company and one's competitors, since many features of quality, price, and availability tend to become equalized over any given period of time. Historically, providing such service has been the great challenge to a salesman's ingenuity, judgment, and ability to think quickly. And now service really is the predominating item available.

Service is lending the knowledge and ability of salesmen to municipal as well as other customers. There are many opportunities every day where a salesman's special know-how can be brought to bear to help his customer:

- With information as to when materials will arrive so that production can be scheduled.
- With the right interpretation of changes in the defense program and their effect upon future availability.
- With information on substitute products and materials.
- With information on better and faster ways to use the product.
- With information that will help the customer to maintain and preserve present equipment.

The history of the last 10 years and the mobilization efforts of the last few months show conclusively that a free government in times of national mobilization is under enormous political pressure to freeze the economy as of some base period considered normal. This freeze, whether partial or total, tends to hide from view the fact that changes nevertheless continue to occur. Changes in technologies, in the relative position and prospects of manufacturing companies, and in the public's purchasing power, desires, and needs, all occur continually in the turbulent water which lies under the opaque icy surface of an economic freeze. The hard fact is that the commercial success of our companies depends on our acquaintance with, and our planning to meet, these almost invisible alterations in our markets.

We manufacturers are in the position of Rip Van Winkle, forced to spend a number of years on a mountainside, while changes are going on all around us, although we cannot see them actually happening. However, we cannot afford to sleep the time away as Rip did, for we must be continually speculating as to what the world will be like when once again we must take up the challenge of an uncontrolled economy.

Those companies whose commercial departments faced up to their post-war planning during World War II, I believe, were the companies which entered the recent post-war period with their production and sales programs most nearly in tune with reality. The same approach to the future is equally essential. Meanwhile, municipal officials, including city purchasing agents, have available in many of the salesmen who call on them a high order of market advice.

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Industrial Development

Some Pointers for Mayors of Small Cities

By W. W. MAXWELL, *Chief of Development*
Canadian National Railways
Montreal, Quebec

IN ALL the literature on town planning and attracting industry, almost nothing is said of the function most vital of all in civic progress—that of the city chief executive. In am glad of the chance to point a word in that direction.

If his thinking is sound, the mayor will realize that he and his colleagues, who have set their hand to developing the community industrially, must have a clear picture of their town and its background. A literal working drawing of what you have must be traced out as a basis of the appraisal that now must be made. This should take the form of an industrial mapping of the city....

Industrial Survey Needed

Integrated with and growing out of the job of industrial mapping is the industrial survey, an assembly of information about the city and its environs designed:

1. To provide for the members of the city government, for the organizations concerned in the progress and well-being of the community, and for the citizens a clear conception of their city, its assets and advantages—its place in the economy of the state; to point to and highlight opportunities that may not have been realized and to supply some vision of the community that might be.

2. To provide a physical basis for the drafting of a working plan of industrial development and civic planning.

3. To provide the promoters of civic development with a comprehensive brochure

(a) for use in that part of the civic-development plan that proposes to publicize the industrial advantages of the community.

(b) as a comprehensive document to accompany and illustrate the industrial map when responding to or attempting to stimulate promising inquiry;

(c) for distribution in limited quantity to cooperating interests such as railways, banks, power companies, etc., and

(d) for the use of your development officer when calling on prospect companies.

What Type of Organization?

The second responsibility of the chief executive is supervision of the organization for civic development. Such a body may be in existence and functioning either as set up by a previous administration or by the chamber of commerce under its secretary or manager. The city administration should be satisfied that the organization is competent and adequate.

In most large centers this function is under the direction of a specialist usually known as the Industrial Commissioner, whose salary and road expenses may be fully paid by the city, by a serivce organization, as is frequently the case, or by contributions from all interested parties. . . .

My advice is *not* to hire a development officer unless you can pay him adequately, assure him a reasonable tenure of office, and make proper provision for the cost of the contact work without which your development effort is apt to be at least partially wasted.

Personally, for the smaller city, I like the Industrial Committee or Community Development Committee plan—at least where a start is just being made in community development and planning. The plan calls for the minimum in cost, but the maximum in unselfish public spirit. It is well known to most of you. It proposes that there should be formed within the city government a committee of councillors, usually three or four, of which the mayor is frequently the chairman. The sparkplug of the organization must be the secretary, and the success of the plan depends on finding, in the council, a candidate for this job with the breadth of vision, energy, and qualities of public spirit that I need not detail.

This committee is frequently amplified by inviting the participation, in an advisory capacity, of private citizens of special qualifications and by putting the finger, from time to time, on individuals who can contribute some particular experience or skill that may be vitally needed—much as the service clubs do; indeed, the service clubs generally figure very substantially in this plan.

Conditions of Success

Members of the committee, in accepting office under the authority of the chief executive, must be prepared to put themselves behind a program of work that might be something as follows:

(a) Preparation of the industrial mapping of the city and environs and the accompanying town survey.

(b) Development of a plan for the solicitation of prospective industry, for the following up of new prospects, and for the servicing of promising industrial inquiry.

On the latter point, the committee should be prepared to delegate one or more of its members with such local technical help as may offer, to move promptly in the solicitation of promising prospects, traveling to meet and negotiate with them on behalf of the city government.

The chief executive, on his part, should undertake to ensure that the municipality meet the out-of-pocket traveling expense of such necessary trips, which would be about all the expense involved in this scheme.

The plan above is sketched in detail because it is one that has been out-

From an address on "The Municipality's Role in Industrial Development," delivered before the Canadian Federation of Mayors and Municipalities, meeting in London, Ontario, June 11, 1951. The complete paper is available on application to the author or to the Federation's national office, Mount Royal Hotel, Montreal, Quebec.

standingly successful in attracting substantial industry. It can, however, be successful only in a city which, like the one I have mentioned, has in its government a well-led group of very earnest men who are willing to give generously of their time and of their office and transportation facilities, and a civic administration with enough latitude to make such a plan practicable.

I may add that in this case the very modest travel expenses of the committee have involved only a fraction of the cost of maintaining an industrial office. Over and above that, the prime advantage is that the committee, being members of the city government, can, when necessary, speak for and negotiate as delegates of that government.

On the other hand, I want to emphasize that I do not favor for larger cities the plan sketched in preference to the establishment of an Industrial Commissioner. It is simply that under this plan, the smaller cities, with the favorable conditions described, can make their very limited dollars go the maximum distance.

Active Leadership Essential

In developing the theme I have assumed active leadership in industrial development by civic administration. It is, nevertheless, recognized that industrial development and community planning, however directed, is, in perhaps the majority of cases, carried out in detail by the chamber of commerce. This paper is, however, addressed to civic executives and so must assume the condition of civic direction.

One more way in which the chief executive can make his authority effective is making indirect no less than direct contact with prospective industry. No town not possessed of a development force organized for full-time field work can depend for solicitation and contact work entirely on its own organization. An important part of a city's work in industrial development is seeing to it that the larger and more highly organized interests, who have forces operating from coast to coast and abroad, do not neglect or forget their friendly cooperation and implied responsibilities to these towns from which their earnings are drawn and in which their basic interest lies. I refer to the railways, the banks and power companies, and the departments of provincial and federal governments, all extremely active and all centrally located and fully organized for their particular function with far better chances of receiving inquiry and meeting industrialists than the necessarily detached city or, in any case, the smaller city.

Here the mayor can accomplish a great deal, because these people owe you something. If it weren't for the factories in your towns and your people who work in them, the box cars wouldn't roll and the bank accounts wouldn't open; the electric juice wouldn't flow and the pulpwood wouldn't come tumbling down from the great northern valleys. . . .

The feature that may be most important of all is the responsibility of the city executive in community planning. . . .

Errors to Be Avoided

In a good deal of late planning there is evidence of some tendency for amenities to be put first—to make sure of the parks, playgrounds and greenbelts, then of schools, public buildings, and residences, and then the commercial district, leaving any unconsidered corner to be zoned for industry—in a phrase, putting gracious living ahead of the means of life itself. It is obvious that a well-developed residential area should not be encroached on by industry. It is equally clear—though not so well recognized—that potential industrial ground should not be rendered sterile through encroachment by the so-styled "higher" types of development.

The patterns of most modern cities have framed themselves around railroads. Often city growth around and even over them has not only smothered the rail facilities themselves but has restricted free circulation through these sections to the point where proposals are made to nip off the rail line and divert it around clear of the city. With the rise in other forms of transportation, such proposals have become more common and popular, some starry-eyed enthusiasts even contending that other types of transportation will replace the railways. On this point I don't think there can be much serious argument. No form of transportation moves general freight at anything like the railways' cost, and hence industry must continue to depend on rail transportation for its major needs. . . .

Some of the finest, best located, and most accessible industrial land on the continent has been rendered sterile for industrial use, and the town that commands it deprived of the industry that was its right, through the gross error of permitting the railway serving it to be flanked by major highways. . . .

Plan for New Industry

Sound civic policies will place the safeguarding of the community's industry of the future high in its program of planning. It will move to secure natural industrial areas against isolation from rail and highway transportation; it will select and legislate for the reservation of adequate acreage of naturally adapted land for the industry of the future, so guiding and controlling the paths of all forms of transport as best to serve those lands and to safeguard them against misuse and sterility.

WHEN YOUR CITY INVITES AN INDUSTRY

CHAMBER OF COMMERCE PRESIDENT: We have fine shipping facilities and a low tax rate.
INDUSTRIALIST: Yes, but do you have modern facilities for sanitation, education, recreation, housing, and public safety?

Corpus Christi

Pumps Away Storm Water

By H. H. STIRMAN
Director of Public Works
Corpus Christi, Texas

Completely self-sufficient, Station A protects Corpus Christi against damage in storms. Shown here are Burgess exhaust snubbers and the American air filters.

THE problem in Corpus Christi was storm drainage. Temperamental weather made the problem constantly annoying, often dangerous. Generally the sun smiles on the city with a warmth that would make both Florida and Southern California envious. Frequently, however, high winds blot out the sun with rain-filled clouds, and the clouds flood the city with water. Sometimes as much as 2 inches of rain will fall in 30 minutes, accompanied by hurricane-like winds.

Steps Toward Solution

The solution was shore protection and drainage to prevent damage from mountainous ocean waves during heavy rainstorms. The first came in 1938-40 with the construction of a 14-foot sea wall, extending two miles from the high bluff, where it circles toward the sea south of town, to the port area, which has a natural elevation of 15 feet. The second portion of the answer came about partially through a network of storm sewers to carry off rain water. These were given a series of outlets through the seawall to permit runoff at normal tides and with gates to keep the sea out at abnormally high tides. This left unanswered, however, the question of rain-water discharge at high tide.

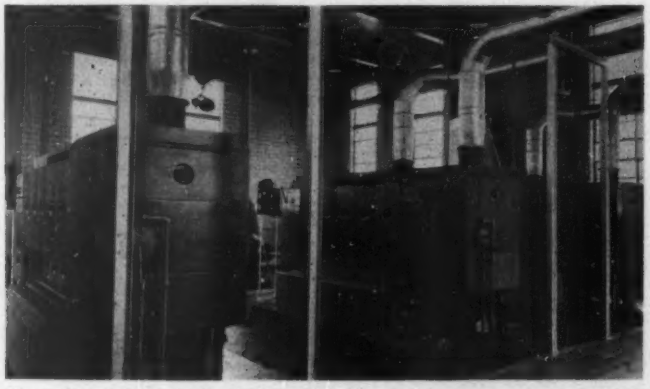
With Myers and Noyes and Associates as consulting engineers, City Manager H. H. Allen and the writer developed a drainage system designed to meet all the problems. A network of storm sewers was constructed, covering every block in the low area and draining to a 9-foot U-shaped sewer parallel to the waterfront. A series of outflow lines with automatic gates was provided to permit drainage by gravity whenever the tide was below 4 feet. The existing system of small, flush, storm-sewer inlets was replaced with wide-curb inlets of large capacity.

The final step was the construction of two pumping stations to handle all drainage when tides blocked the normal outflow, and to dispose of rain water when rainfall was too heavy for normal gravity flow to clear. Station A has three 54-inch, vertical Fairbanks-Morse pumps, each rated at 75,000 gpm at a 9-foot head. Each pump is driven by a 325-hp F-M diesel through Farrell-Birmingham gears, which reduce an engine speed of 514 rpm to a pump speed of 301.6 rpm.

Normally, water flows by gravity from the 9-foot sewer through an 8-foot concrete outflow sewer which extends 150 feet beyond the sea wall into the bay. When tides rise and threaten to back up in this line or when rain is so heavy that pumps are needed to prevent flooding of the streets, a gate is swung across the outflow sewer and uncovers an opening into the pump suction chamber. The pumps discharge into the outflow sewer beyond the gate, providing positive drainage even at record tide levels.

Station B is located at an elevation of 3½ feet, the lowest spot in town. At this station there are two pumping units: one a 54-inch, 75,000-gpm Fairbanks-Morse pump driven by a 325-hp F-M diesel motor; the other a 36-inch, 21,000-gpm F-M pump driven by a 75-hp motor. The electric pump is automatically controlled by the level of water in the suction chamber, and guards against rain-water damage in the lowest section of the city. The pump discharges into an elevated outfall from which the water flows to the bay by gravity.

It was deemed important to make the plants self-sufficient and capable of functioning in an emergency without any outside source of power. Heavy-duty diesels were chosen to insure dependable performance. Chief Operator G. B. Dodds reports that the diesels can be started and put to work in one minute. It takes four minutes to swing the main sewer gate closed.



These three 325-hp Fairbanks-Morse diesels can be started within one minute to pump the water from the streets of the Corpus Christi business district.

Responsive to Light Rains

Even in the case of light rains, the diesel pumps provide a valuable safety factor. If the sewers are filling up, the operator runs two diesels for 30 minutes, which usually is time enough to empty the sewers and provide 5,000,000 gallons of water for underground storage.

Onamia, Minn., Tries Four Times

Community of 700, situated on the shores of Lake Onamia, succeeds in building sewerage system and treatment plant after three previous attempts fail

AFTER SIXTEEN YEARS, the people of Onamia achieved their desire — an adequate sewerage system. Now they can keep their beautiful lake free of pollution and eliminate the use of septic tanks, which are difficult to operate in the vicinity because of the high groundwater table.

The community first endeavored to build sewers in 1935, with the help of the WPA, but even with the WPA allotment the cost was too high. A second attempt was made in 1949, and advanced to the point of receiving bids, but the low bidder had difficulty in furnishing a performance bond. The balance of the bids was so much higher that the cost again was out of reach. A third effort was made a year later, when the engineer had revised the plans in an effort to lower the cost, but still the bid price of $268,000 was beyond the means of the village.

Fourth Try Successful

Finally, a year later, a new study, with new plans, prepared by Robert J. Ellison, consulting engineer, of St. Paul, Minn., made it possible for the bidders to reduce their figures. The low bid, within 1% of the engineer's estimate, amounted to $115,590.65 for the sewers, $85,984 for the treament plant, and $27,800 for the two lift stations. The total, $229,375, was almost $40,000 less than previous figures, even in spite of sharp cost rises.

The sewers will include a total length of about 22,000 feet at an average depth of 10 feet.

How the Plant Operates

The plant provides primary settling and trickling filters for the final treatment. It is designed to handle 273 pounds of BOD daily at an average flow of 155,650 gallons and a maximum flow of 190 gpm. The primary clarifier is a hopper-bottomed Spiraflo tank, 14 feet in diameter, and provides a detention of 47 minutes at maximum flow. It is not mechanized. The trickling filter is 25 feet in diameter and 6 feet deep, and makes use of Aero-block file media rather than crushed rock. Aero-filter distributor arms apply the sewage to the filter.

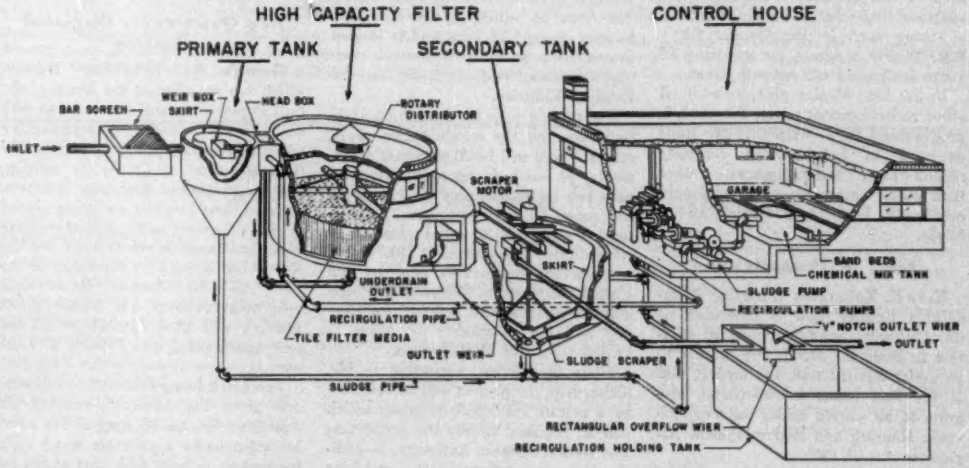
Following the filter is a 22-foot diameter Spiraflo final clarifier. This has a 10-foot side-water depth and is equipped with a mechanized scraper for sludge removal.

The plant is designed for parallel recirculation because of a milk waste and an anticipated slaughterhouse waste that the plant will handle. Recirculation is taken from the race of the final clarifier and goes to the effluent of the primary clarifier. This reduces the size of the final clarifier. Since the recirculation is taken from the race instead of the final clarifier effluent, the area inside the clarifier skirt can be based on the volume of raw sewage, whereas the area in the race is sufficiently large to take care of raw sewage plus recirculation. The recirculated liquor travels almost the entire distance around the race before it is returned to the filter. The equipment for the two clarifiers and the filter was furnished by the Lakeside Engineering Corporation of Chicago.

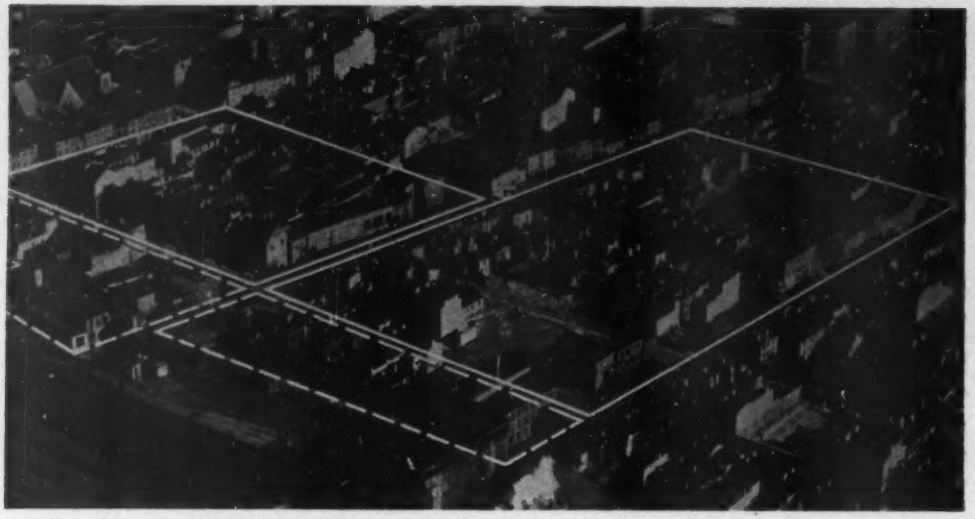
Sludge is treated with ferric chloride and dewatered on sand beds. It is not digested, but is hauled to farm lands weekly.

Financing Through Bonds

The project will be financed by improvement bonds to be retired through front-foot assessments against benefitted property, and a pledge of a portion of the municipal liquor-store earnings. The cost of operation and maintenance will be paid by sewer-service charges.



A schematic drawing of the new Onamia sewage-treatment plant.



Solid lines show areas of Project Number 1 and Project Number 2 in Philadelphia's East Poplar section. Broken lines delineate areas which are to be reserved for park purposes, in connection with projects now under way.

Philadelphia Starts Redevelopment

Quaker City is first to start project construction under 1949 housing act

THE first project to go into construction as part of Title I of the national slum-clearance and redevelopment program has begun in one of Philadelphia's most blighted areas. Here, in the city's so-called East Poplar area—a district scarred by decay and overcrowding—the 174-unit project is a strong start in the Quaker City's $200,000,000 program for restoring 13 areas designated for redevelopment.

In the East Poplar area, as with all other redevelopment areas, the work is programmed on a comprehensive basis designed to bring about complete neighborhood redevelopment, rather than spotty improvement which could eventually lead to a recurrence of blight.

First in Pennsylvania

Kevy K. Kaiserman, a leading Philadelphia builder who is chairman of the Authority, points out that, in addition to being the *first* in the country to go under construction, the project also is the first urban-redevelopment program to be started under the Pennsylvania Housing and Redevelopment Assistance Act of 1949.

The East Poplar area is bounded by

By JOHN LaCERDA
Public Relations Division
Philadelphia Redevelopment Authority

Girard Avenue, 5th Street, Spring Garden Street, and the Reading Railroad. It encompasses some 50 city blocks. The tract on which ground has been broken covers 4.34 acres and is located in a block bounded by Fairmount Avenue, 7th Street, Wallace Street, and the Reading Railroad.

The project calls for demolition of 67 buildings and the rehabilitation of 14 others. There will be 20 efficiency apartments, 34 one-bedroom apartments, 84 with two bedrooms, and 36 with three bedrooms. Of the apartments, 136 will be new units and 38 will be located in rehabilitated structures. A $1,743,000 construction contract is held by the United Construction Company of Philadelphia. A demolition contract for $33,300 is being completed by Allen E. Lashner, also of Philadelphia.

Upon completion, according to Mr. Kaiserman, the project will be operated by a private management group which will be required to buy the properties. The Redevelopment Authority, in addition to using federal, state, and city funds, is planning to raise $1,500,000 by floating its own bonds at a rate of roughly 3%. About $358,300 is for land acquisition, of which $264,800 is being written off as a subsidy through the use of federal funds at the rate of $2 for every $1 expended by the city and state.

New Quarters for Displaced Families

Through its Rehousing Bureau, which has an office in the heart of the East Poplar area, and which works with an advisory committee representing seven public and private agencies, the Redevelopment Authority is helping displaced families find new quarters. Some of these families are being placed in public-housing units, and others have gone into apartments referred to the Rehousing Bureau by members of various real-estate boards. When their own neighborhoods are rebuilt, these families will have first choice of the new apartments, says Francis J. Lammer, executive director of the Authority.

The block being rehabilitated adjoins one which the Authority enabled the American Friends to acquire for rehabilitation under a program which calls for tenants to help with part of the la-

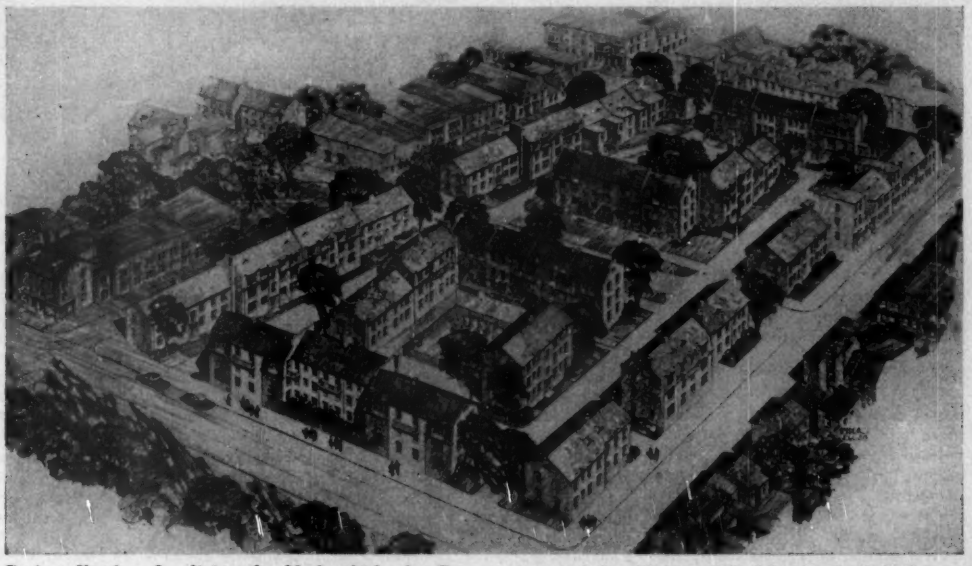
bor involved. Under the Friends' program, the residents can eventually become owners of the restored properties, with the labors which they expend being accepted in lieu of money investment. The Friends' project, made possible through a Redevelopment Authority land-subsidy grant, will provide apartments for 102 families at an estimated rental of $10.75 to $20.20 a week per room, including utilities. The Friends are understood to be interested in taking over an additional block, just to the north of the one which they now possess.

In addition, the Philadelphia Housing Authority is planning a public housing project in the East Poplar area and already has architects at work. Another project calls for the creation of a greenbelt strip to serve as a buffer between the Reading Railroad and the East Poplar projects.

Cooperation with the University of Pennsylvania

Another recent activity of the Authority is the agreement it has entered into with the University of Pennsylvania. The Authority will exercise eminent domain to help the University acquire new buildings, as well as property on its campus for the erection of a new Wharton School and physics school, which will cost about $4,500,000.

The cost of acquiring the tracts, including existing buildings, will be approximately $743,200. The University will compensate the Authority for the cost of acquiring the sites and buildings now standing, but will do the demolitions, construction, and landscaping under its own direction. Some of the properties involved are already owned by the University and these will be taken also, then resold to the University with continuing controls as to use of land and the redevelopment progress.



Project Number 2 adjoins the block which the Redevelopment Authority enabled the American Friends to acquire for rehabilitation under a program calling for tenants to help with part of the labor involved. Both projects will contribute to overall neighborhood development—an idea which is in the fore in Philadelphia today.

Redevelopment Program Moves Ahead

PHILADELPHIA is the first of the cities across the nation which are now developing plans for slum-clearance programs to receive an allotment order approving a federal loan and capital-grant assistance for a redevelopment project.

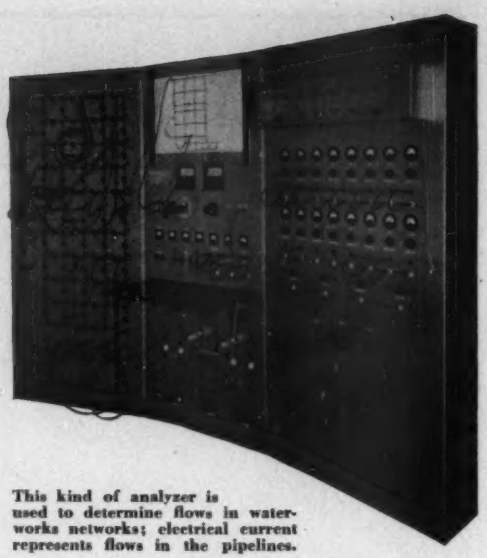
As of June 30, 1951, a total of 232 local communities had received capital-grant reservations under the federal program of assistance to cities and towns in clearing their slums and blighted areas, according to the Housing and Home Finance Agency. Of that total, 115 localities had also obtained approval of advances of planning funds, which are intended to cover all necessary expenditures in connection with identifying eligible projects, determining project costs, preparing redevelopment plans, and taking other necessary steps before signing of a loan and grant contract.

An additional seven communities which have not obtained planning advances are proceeding with work in preparation for slum-clearance and urban-redevelopment projects by expending local funds under prior approval of the H.H.F.A. Administrator.

How to Make Water-Line Networks *Talk*

When measured by an electric analyzer, distribution systems show quickly where flow problems exist

By MALCOLM S. McILROY
Professor of Electrical Engineering, Cornell University and Consultant to Standard Electric Time Company



This kind of analyzer is used to determine flows in waterworks networks; electrical current represents flows in the pipelines.

MILLIONS of dollars are spent annually on new pipeline networks or on extensions or replacements of the plant in systems which distribute water, gas, or steam in municipalities. The high cost of these construction programs makes it imperative that the best possible results be achieved. Often the engineers responsible for these projects are not certain that the plans adopted for construction produce the best network performance per dollar spent.

Previous Difficulties

In a similar situation, engineers who design electric-power systems habitually make the best selection from the alternate plans which appear feasible for construction. Why is not the designer of pipeline networks equally certain of the economic wisdom of his plans? The answer is simple. The calculations required in order to compare the operating characteristics of alternate methods of constructing fluid-distribution systems are very tedious and time-consuming. As a result, the engineer usually conceives one or two plans that appear sensible. He checks the expected performance of these plans on paper, and adopts the better one.

Contrast this procedure with the variety of plans which are usually considered by a power-system engineer before he decides on a program of action. He may try various combinations of locations and capacities of generating stations; he may experiment with different sizes of wires and different operating voltages, and he may compare a variety of routes for the transmission lines that transfer power from generating stations to load centers. For each plan, he determines the performance under normal and emergency conditions, and estimates the operating and fixed charges. He then adopts the plan which offers the best combination of performance, reliability, and economy.

The computations that would be required to compare the behavior of many power-system designs would be fantastically expensive and would consume many months. But the electrical engineer does not have to make these computations. Instead, he uses a power-system calculating board, a scale model of the large actual network, to provide the data he needs. Today, no alert management of a power system would authorize any significant investment in the interconnecting or generating facilities unless studies had been made on a calculating board of the expected performance of the system.

Electrical-Analogy Method

Since an electric calculating board is so useful for power-system studies, one logically searches for a similar device to analyze pipeline networks. We have long known that electricity can be used to provide a qualitative analogy for the solution of fluid-flow problems. Electric current can represent fluid flow, and voltage can represent pressure drop. Therefore, a collection of resistors, arranged to represent a pipeline network, can simulate that network.

Ordinary resistors cannot conveniently represent the operation of pipes in a quantitative sense, because these resistors perform according to a law of direct proportionality which does not apply to pipelines as used in practice. For example, if a drop of one volt across an ordinary resistor accompanies a current of one ampere, a drop of two volts corresponds to a current of two amperes. Pipelines, however, do not operate in a linear manner. A loss of pressure of one pound per square inch in a certain pipeline may result from a flow rate of one mgd, but if the flow changes to two mgd, the loss of pressure becomes nearly four pounds per square inch. This peculiar characteristic prevents the use of linear resistors to form an automatic quantitative analogy to pipelines.

To provide an automatic analogy for the analysis of pipeline networks, special *nonlinear* resistors are needed. Resistors of this type are used in a new device known as the McIlroy Pipeline-Network Analyzer, produced by the Standard Electric Time Company of Springfield, Mass. This analyzer offers a ready means of comparing the performance of any number of alternate plans of constructing or operating a pipeline distribution system.

Pipeline-Network Analyzer

The accompanying photograph illustrates a non-linear analogy type of pipeline-network analyzer which is now in use in the Department of Civil Engineering, at the State College of Washington, in Pullman, Wash. A stock of the special non-linear resistors, known as "Fluistors," is available to represent a wide range of pipeline lengths, diameters, and roughnesses. Each Fluistor consists essentially of a specially proportioned tungsten filament mounted in an evacuated glass bulb. The voltage across this filament automatically

varies as the 1.85 power of the current through it, a relationship directly analogous to the Hazen-Williams hydraulic formula.

If the operator of the analyzer wishes to save time by recording only those values of flow and pressure drops that are significant, he can be guided by the brightness of the Fluistor filaments. The brightest filaments correspond to pipelines which operate with the largest friction losses. The Fluistors are inserted in sockets behind the left-hand panel of the analyzer, which is arranged to represent a large variety of network layouts, comprising as many as 99 pipelines.

The right-hand panel of the analyzer contains equipment to simulate 16 loads, which may have any desired flow rates, and may be connected readily to any of the network terminals which represent pipeline junctions. The central panel carries the controls which normally duplicate three sources of fluid supply, such as pumping stations or reservoirs. Six sources may be represented if necessary, with some sacrifice of operating convenience. The central panel also supports the master instruments which indicate directly in fluid units the flow rate in any pipeline and the pressure drop from friction between any pair of pipeline junctions.

A map panel is furnished at the top of the board to aid the operator in visualizing the locations where pressure drops are measured. To obtain a reading of pressure drop, he inserts voltmeter plugs through holes in the map. The analyzer is manually controlled so that pressures or flow rates at sources are properly simulated. Flow rates to loads may be maintained either automatically or semi-automatically, depending upon the type of equipment provided.

Original Research

The original research model of the analyzer, located at Cornell University, has been used in more than 70 analyses, most of which concerned water-distribution systems. Analyses have also been conducted of gas distribution at low and high pressures, and of steam distribution. Use of the analyzer is anticipated in the fields of oil transmission and in heating and ventilating buildings.

As an example of operating speed, the flows and pressure drops in the 70 trunk mains of a city water-distribution system supplied from five sources were determined in one day, including set-up time. During the following day, six alternate conditions, with various assumed elevations of reservoir surfaces and different sets of loads, were studied. A large construction project was subsequently authorized on the basis of information learned from the analyzer.

The pipeline-network analyzer provides an automatic electrical analogy to the performance of complex networks of pipelines. It can be constructed in almost any desired capacity, and may be designed to represent either one particular network, or a great variety of networks. It is a powerful tool for the engineer who wishes to obtain the greatest possible benefit from the money invested in pipeline systems. The cost of the analyzer is low compared with the savings that can often be realized from its use.

EDITOR'S NOTE: For a more detailed description of this process, see the *Journal* of the American Water Works Association, April 1950, page 347, "Direct-Reading Electric Analyzer for Pipeline Networks," a paper which won the John M. Goodell award for 1951.

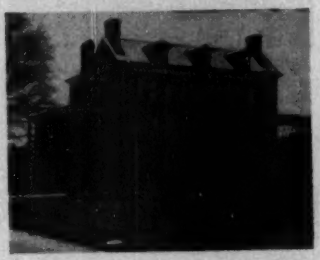
Tax Institute Acquires Fine Princeton Home

A 16-ROOM HOUSE in Princeton, N. J., surrounded by extensive grounds, has been purchased by the Tax Institute, Inc., as its general headquarters, replacing the inadequate space formerly occupied at 150 Nassau Street, in New York City.

The Tax Institute, a national organization with members in all parts of the United States and in a number of foreign countries, is one of America's oldest and largest tax organizations. It conducts research and publishing activities, arranges conferences, maintains a library, and carries on a number of other activities in the field of public finance. Its publications are widely used by tax lawyers and accountants, government officials, businessmen, professors, and students.

Kenneth Perry, Vice-President of Johnson & Johnson, is president of the Tax Institute, and Herbert M. Kelton, Treasurer of United States Rubber Company, is Treasurer. Vice-Presidents are Dan Throop Smith, Harvard Graduate School of Business Administration, and C. Emory Glander, member of the Bar of Columbus, Ohio. Mabel L. Walker is Executive Director.

Harold S. Buttenheim, Editor of THE AMERICAN CITY, was the founder and first president of the Tax Institute.



Tax Institute's new Princeton headquarters.

Zoning Variance Granted

When the Tax Institute was negotiating with the previous owners for the purchase of this residential property, it was pointed out that to legalize the proposed use, a variance to the zoning ordinance would be required. The premises in question are adjacent to the borough boundary, but located in a residential A zone.

At two public hearings called by the Board of Adjustment, prominent citizens of Princeton testified concerning the nature of the Institute's activities.

Following these hearings the Board of Adjustment voted to recommend to the Mayor and Council authorization of the proposed permit, upon the following conditions:

(1) The premises shall be used as the non-commercial office and library of a non-profit corporation furnishing research, reference, and library services in the fields of taxation and public finance to its dues-paying members and others who subscribe therefor on a fee basis.

(2) No exterior alteration of the existing structure on said premises shall be made except as required for purposes of safety.

(3) No addition to the existing structure, nor any accessory building shall be constructed upon said premises except such accessory buildings as are permissible in connection with a single family residence; provided, however, that no living quarters shall be included in any such accessory buildings.

(4) No subdivision of said premises and no residential use thereof shall be permitted so long as said variance in use is continued, and

(5) Adequate off-street parking space for 25 automobiles shall be provided at all times; not more than 15 persons shall be employed at any time on said premises on either a full or part-time basis; and no organized meetings of more than 100 persons shall be held on said premises.

(6) No change in the foregoing conditions will be permitted except upon application to the Board of Adjustment and after public hearing upon notice as provided in the Zoning Ordinance.

The Mayor and Council, after due consideration, voted to concur, thus clearing the way for the purchase and the present occupancy of this fine property by the Tax Institute.

Dothan Community Centers Cost $312,000

LAST month THE AMERICAN CITY ran an article about Dothan, Ala., entitled "Two Complete Community Centers." It should have been mentioned that the combined construction cost of the two buildings and their additional facilities was $312,000, with the work being done by a local firm, W. V. Sullivan, of Dothan.

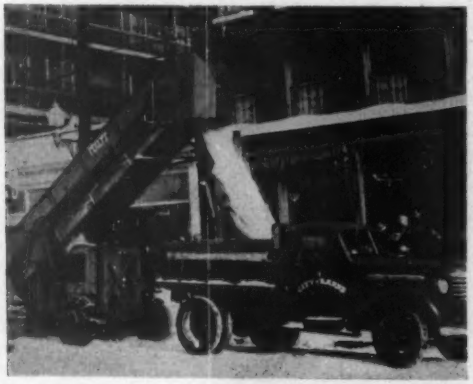
In parks, playgrounds, and areas hard to get at for snow removal, the snow blower saves a lot of labor. A product of the Maxim Silencer Company, of Hartford, Conn., this blower is at work on one of the local park areas.

Windrowing snow to the center of streets enables a loader to pick it up at a single pass. An Adams Traveloader is at work on the streets of Indianapolis, loading snow at the rate of 12 to 20 cubic yards per minute.

Snow blowers clear streets efficiently. A Sicard blower mounted on an Austin-Western all-steer grader skillfully negotiates the short radius of this street corner.

Snow Removal Illustrated

A round-up showing good practice in snow-removal and ice-control operations throughout the country



In downtown areas, snow cannot be pushed aside, but must be hauled away. A loader made by the George Haiss Manufacturing Company of New York City is shown here.

When snow gets packed to the pavement, tough, heavy-duty equipment is needed to pry it loose. Pictured is a Galion grader leaning into an ice-packed layer.

Careful application of rock salt can relieve snow and ice headaches. A Tarco Scotchman salts down a slippery underpass location in Springfield, Ill.

Equipment used for maintenance work during the summer sometimes can be employed for snow removal work in winter. A Caterpillar D4 tractor with a Trackson bucket is clearing snow in Columbia Heights, Minn.

For parking lots, driveways, and sidewalks, a good, sturdy one-man pusher plow will suffice. This unit, made by the Gravely Motor Plow and Cultivator Company, of Dunbar, W. Va., can be fitted with a blower attachment.

The Problem of Detergents in Sanitary Engineering

INTERESTING as have been the fretful comments of those sanitary engineers who still block the use of the kitchen-food-waste disposer in their city, we find even more interesting their reaction to the widespread use of another household improvement, the synthetic detergent.

While some sanitary engineers give the impression that the sewers will collapse, the treatment plant will explode, and pestilence will emerge from the stream receiving the sewage if one drop of macerated food wastes reaches the sewer, yet not one of them would dare go before any municipal governing body and recommend the prohibition of synthetic detergents and the return to old-fashioned soaps because of their effect on the sewerage system.

Although those who obstruct the use of the grinders are in a decided minority, many of them are our most brilliant practitioners in the field of sewage works. Yet the closeness of their contact with the field has a tendency to obscure facts that pertain to the municipality as an operating unit. For example, the officials of the Oklahoma State Board of Health state that other factors weigh more heavily in stream-pollution abatement than the load imposed by the grinders. The use of synthetic detergents is a dramatic example.

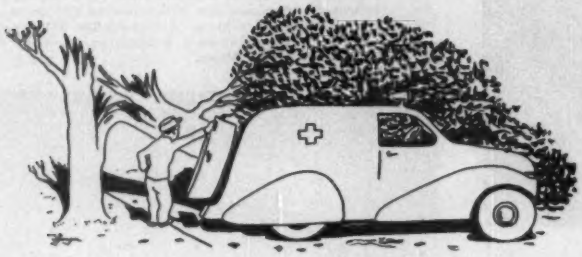
Complaints Against Detergents

Their widespread use, in restaurants and similar commercial establishments, has made the conventional use of grease traps obsolete, according to studies by both the City and County of Los Angeles. Also, study by the Research Division, College of Engineering, New York University, has confirmed this and the investigators have made tentative recommendations for a much more complex, more difficult-to-clean grease trap. Moreover, they found that the sewer lines became clogged in the particular study that they made, and traced the difficulty to the detergents. The same study disclosed that the detergents have a tendency to increase the BOD and suspended solids in the effluent of the treatment plant. And all over the nation there are innumerable examples of suds-like foam that has formed on aeration tanks in sewage-treatment plants. Here again the synthetic detergent appears guilty on the basis of circumstantial evidence.

But one can be sure: no sanitary engineer would ever dare to ask his municipal governing body to prohibit the use of the detergents. This problem, the public has thrust in the laps of the engineer, and he will solve it.

Similarly, we will expect him to accept the waste-food grinder as an operating tool that makes homes and businesses more sanitary, and more convenient. We are confident that he will find the use of the grinders less of a problem to him than the use of the detergents.

Municipal Liability For Injuries from Falling Trees



By FRANCIS GEORGE
Attorney-at-Law
Pittsfield, Mass.

A RECENT incident in Lynn, Mass., points up one of the often overlooked responsibilities o fcities and towns: liability for fallen trees or tree limbs. Every city has some trees that are potential lawsuit makers; when the tree blows down and injures someone, it is usually the city who pays.

The ruling in the Lynn case stated that a city is not responsible to everyone who might be hurt by a falling tree; however, most courts are more generous with the cities' money, and except in unusual circumstances require the city to pay the damages.

In Lynn, last summer, an auto-radio repairman was working on a customer's car parked in the street in front of the radio shop. A sudden storm blew up and the repairman got into the car to sit it out. The wind increased and a large tree cracked through the roof of the car, injuring the radio-man. The tree was standing in a public way before it blew down; it had several large holes in the trunk where children had been building fires, and city officials knew about its condition.

A Strange Quirk in Municipal Law

Judge Spalding, of the Massachusetts Supreme Judicial Court, let the city off —much to everyone's surprise. He said that the city would be liable if the man injured had been a traveler on the highway, but that this man was using the highway for a workshop and could no more recover than a "juggler or gymnast who should occupy a portion of the street to exhibit his feats of skill or agility and strength."

In making this distinction—that is, allowing someone who is hurt while using the street as streets to recover damages, but not allowing damages to someone who is using them for some other purpose — Massachusetts stands alone. If this rule should spread, it will be one of the strangest quirks that municipal law has taken in modern times.

The general rule is that cities are liable if it can be shown that the tree was a nuisance as it stood, or that the city was negligent in not taking it down. Both of these conditions were present in the Lynn case, but the city escaped. Ordinarily, the city need not even actually know about the defective tree; if it should have known, it is responsible.

"Sovereign Immunity" or "Act of God"

The two grounds of defense, before the Lynn case, usually used by city solicitors when a city is sued in this type of case are: that highways are a public function and the city is entitled to "sovereign immunity" and therefore exempt from suit, or that a tree blowing over is an "act of God" and no one should be held responsible. Neither of these defenses has been conspicuously successful.

A few cities have escaped on the grounds of sovereign immunity, but only in Alabama has a court squarely said that a city has no duty to remove dead or dying trees that are liable to fall across the highway. That decision appeared in 1928. Since then the cities of Montgomery and Birmingham have both had to pay damages caused by falling trees, and while the Alabama court has not expressly overruled the 1928 case, no prudent city government in Alabama today would disregard a dangerous tree.

In no case has a city been successful in arguing that falling trees are acts of God. As a matter of fact, the Supreme Court of Kansas told the City of Wichita that it should expect cyclones and tornadoes in Kansas and that the city should keep all the trees at all times prepared for severe storms.

Occasionally a city will claim that the person injured was at fault and would not have been injured had he been more careful; however, that defense has never worked. In Newburyport, Mass., the injured person was standing around watching a tree warden remove a dead tree, and, despite warning, got in the way and was hurt when it fell. The court still made the city pay. Since that case was decided in 1912, such a spectator victim perhaps could not recover now in Massachusetts as he doesn't seem to be a traveler.

When a city, or contractor working for the city, has weakened a tree, usually by cutting the roots in laying a sidewalk, street, or main, and the tree later blows over, the city has always had to pay the damages.

Seven Cases Which Cities Have Won

In only seven cases have cities escaped liability for damage caused by falling trees in the highway.

1. In the 1928 Alabama case calling the highways a government function and therefore the city not liable, although that case is now doubtful.

2. A 1911 Connecticut case involving a special law that set up the exact boundaries of a city's responsibilities in Connecticut.

3. In Illinois a boy was killed by a falling tree limb while playing marbles in a park. The city was held not responsible because a park is a government function and the government cannot be sued.

4. The 1950 Lynn, Mass., case, saying that a city owes a duty only to travelers.

5. Detroit has a law that the city must maintain highways, streets, and sidewalks and that is all. When a tree limb from a tree growing between the sidewalk and the street fell on a pedestrian, the city was held not responsible. This case was decided in 1909, and is a narrower view than most modern courts take.

6. A small Minnesota town was relieved from liability in a confused court opinion

in which the judge seems to be saying that the town is not liable because it is not liable and that is that. It is not a case that will give much comfort either to towns or tree victims.

7. In South Dakota a county escaped when a tree fell on a woman who was on a state highway, on the ground that the state was responsible for those highways and not the city.

There probably are other unreported cases, cases that have not been appealed, but out of the hundreds of verdicts given against the city, only these seven are reported as letting the city out. We have been talking about cases where injuries were caused by a tree falling on someone; the city has a slightly better chance if the tree has already fallen and the damage is caused by someone running into it. Here the most crucial thing is whether the city knew about the tree.

How Tree Experts Can Help

In any case, if the city knew about it, or the judge thinks they should have known about it, and the injured person can prove it, the city's lawyers might as well zip up their brief cases and go home. The New York Supreme Court has announced that a city is bound to use more than ordinary means to decide if a tree is likely to fall; the city should know the habits of a tree of its kind growing in local soil; it should not be fooled by an appearance of health on the surface of the tree but should ascertain if there are any internal defects that might later cause the tree to collapse. This means that, in New York at least, no city can feel safe unless it employs a tree expert to check regularly every tree on or near a public way. And this view seems to be general. Only in Mississippi and North Carolina are cities expected to use "nothing more than reasonable care to discover the defects." Elsewhere cities must be alert to remove dead or dying trees. In setting this high standard of responsibility for cities, courts have universally allowed a city to enter private property to remove a dangerous tree despite the objections of the owner.

If one of these borderline trees falls into the street and the city actually knows that it is there, or should expect it to fall because the tree was in bad condition even though on private property, or if the tree has been in the street for some time, the city must always pay if someone piles into the tree. But if the tree is one that no one, even a tree expert, would expect to fall, and it does fall from private property into the street, and if it has been there only a few hours when someone smashes into it, the city may not be liable.

It all boils down to this: a city is responsible for virtually every tree on or near a public highway.

Cedar Rapids, Iowa, Adopts Covered Refuse Trucks

By CARL D. SMITH
Assistant Health Officer
Cedar Rapids, Iowa

Finds that 11 closed-body trucks will do the work of 17 open-body trucks with fewer men required per truck

CEDAR RAPIDS, like many other cities, has many problems pertaining to the collection of garbage and other kitchen wastes. These problems have arisen from the increased cost of labor, equipment, and operation, as well as a 15% growth in the population of the city.

Until the first of April this year, we had been using sixteen 3-yard grain-box-body trucks and one 9-yard Heil Colecto-Pak body truck to handle the collection of garbage and cans, bottles, and other trash. We found the Colecto-Pak body so satisfactory from the standpoint of sanitary hauling, as well as in its increased load capacity, that we have determined to standardize on this type of collection equipment. Therefore, in April of 1951, we added three more 9-yard Heil Colecto-Pak bodies mounted on Model 352 GMC chassis.

Units and Bodies Produce Large Saving for City

These four 9-yard enclosed units and ten 8-yard grain-box bodies are doing the same job that was done by 16 open and one closed unit in the past. This has materially reduced our operating cost and has enabled us to provide more garbage collection to at least a portion of our city. Additional units will be added each year, as the budget permits. We feel that eleven 9-yard enclosed trucks will handle our entire collection program with the utmost in efficiency and economy.

Sanitary Fill Helps Lower Costs

Another factor that has added materially to our muncipal collection program has been the diversion of $25,000 a year from the cost of incineration to the use of the Collection Department. This was achieved through discontinuing the municipal incinerator and inaugurating the sanitary-landfill method of refuse disposal.

The city formerly used an incinerator for burnable material, including garbage, and a dump for non-burnables. Through the sanitary-landfill method, we are able to combine garbage and tin-can collection, thus clearing the alleys with one collection rather than two. The only added cost to the dump operation has been the purchase of a Model D-6 Caterpillar tractor, equipped with a Traxcavator front-end loader, plus its cost of operation.

We are endeavoring to provide to the householder the most complete, sanitary refuse-collection service at the lowest possible cost, and, therefore, are adopting the measures that will accomplish this.

These are the last three refuse trucks which were put into service in Cedar Rapids, when the local sanitation department decided to standardize on equipment. Pictured with the trucks are the men who were responsible for their being adopted for use by the city. They are, from left to right, Assistant Health Officer Carl D. Smith; GMC representative Ray C. Phelan; Mayor Clarence L. Sedive, and L. I. Shoemaker, Heil Company representative.

Los Angeles' Prestressed Pedestrian Bridge

Bridge-building history is made as the State of California introduces a construction technique which promises advantages for today and for the future

FROM his vantage point above the Arroyo Seco in Los Angeles, a rigger, working for Contractor Walter Kaucher, slowly revolved his inverted hand in a "lower-your-load-easy" signal. It was 2:30 p.m. on March 7, 1951. Cables, tight as fiddle strings under the 50-ton load, vibrated as the crane operator's foot eased up on the brake. With hardly a bump, the massive girder came to rest on its leveling plate.

As of that moment, bridge-building history was made in the Pacific Coast metropolis, for the structure is the first prestressed bridge west of the Mississippi River.

Municipal officials of Los Angeles, as well as city engineers of many nearby communities, are watching the project with interest. On this first Western installation, prestressing advantages were sufficiently clear-cut to allow the California Department of Public Works to make use of the technique. The prestressed design cut the weight of each girder from 87 to 50 tons, and the contractor was able to prefabricate the lighter girders away from the Arroyo Seco flood-control channel, and crane them later to their final position.

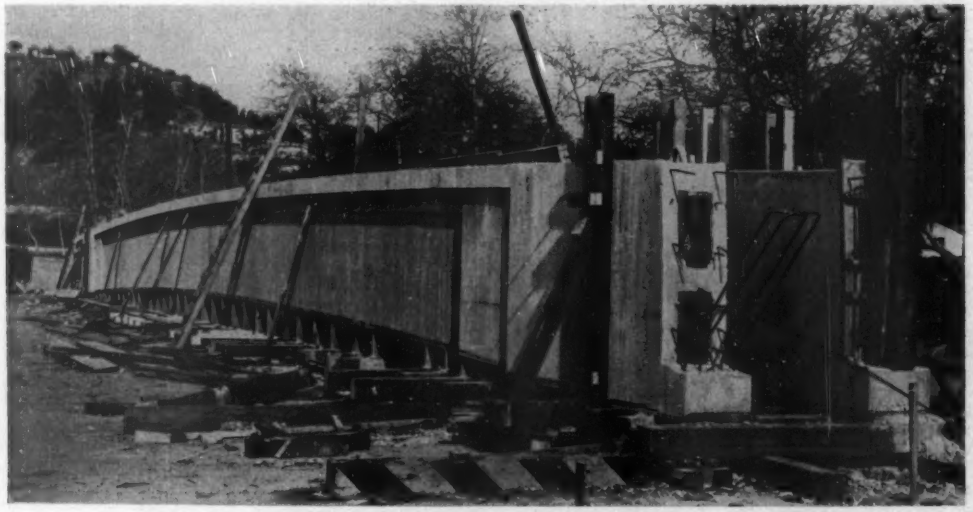
Possible Municipal Uses

Although the new bridge was designed and built under supervision of the California Division of Highways, it has several features of definite interest to municipal officials. Its reason for being was an agreement on right-of-way between the state and the city. Some years ago, when the Arroyo Seco Parkway was constructed, work cut off access to a small Los Angeles municipal park. Under the terms of the agreement, the State Division of Highways agreed to build a pedestrian bridge across the flood-control channel that would give people direct access to the park to use the tennis courts and other recreational facilities, instead of necessitating their walking all the way around to the 58th Street over-crossing, which spans both the parkway and the channel.

Some type of reinforced-concrete design was desirable because the structure had to conform to architectural standards and appearances previously in vogue. The prestresseed design not only solved that problem, but it also pioneered a new type of bridge: slim, graceful, beautiful—and strong enough to stand in repose under its designed load of 55 pounds per square foot.

It also gave the Division of Highways a chance to experiment with the improved new design on a small scale. Information picked up during construction can be put to use on larger structures in the future.

The Arroyo Seco bridge points a way



These girders formed part of the first prestressed bridge west of the Mississippi River.

for cities to use similar methods, possibly prefabricating at some central location, and then hauling the bridge members to the field. The prestressing design also requires less concrete and reinforcing steel than conventional designs, and the saving in steel may be of immense value during the emergency defense-build-up period.

If the prestressed design has any legitimate drawback at present, it is its necessity for high-priced skilled labor necessary to do the prestressing work. Opponents of the design claim that until more skilled labor or better work methods are developed, engineering costs for prestressed and conventional designs will be about equal in the United States.

A Big "Little" Bridge

The Arroyo Seco bridge is a lot of structure for the money. The contract cost was only $23,770. Add to that a firm bid of $5,000 for the prestressing for a total bill of under $30,000.

The bridge consists of two 110-foot girders, an 8-foot pedestrian deck, abutments, and small approaches. The girders, each with 136 wires 0.2 inches in diameter, are the only members to be prestressed. The live-load design on the pedestrian deck is 55 pounds per square foot.

So far as unit stresses are concerned, they are rather conservative. Working stresses of 1,700 psi are planned for concrete testing 5,000 pounds at 28 days. A strain of 0.6 of ultimate tensile strength was designed for each prestressing wire, and minimum ultimate tensile strength of 200,000 psi. The design provided for slightly more prestressing capacity than necessary, and design engineers provided 14 extra prestress wires for a safety margin.

Final design stress was 102,000 psi, and actual working stresses will be measured by six Carlson strain-gauges in each girder. Engineers of the University of California's Institute of Traffic and Transportation Engineering, working closely with the Division of Highways, will make future readings.

Each prestressed girder weighs 50 tons, while a conventionally designed member would have weighed 88 tons. So far as girder dimensions are concerned, the prestressed members are 10 inches wide and 5 feet 8 inches deep, with a top flange 9 inches thick and 1 foot 8 inches wide. The girders will also serve as guard rails because the dowel steel for the walkway slab is 4 feet below the top flange of each member.

The prestressing method chosen was the one recently developed by Prestressed Concrete Corporation of Kansas City, Mo. It departs somewhat from pioneer prestressing methods. It makes use of five prestress wires in a single bank, with stressing blocks and a peaned button head on the end of each wire. The stressing blocks, of high-grade steel, are each 3½ inches deep with a 4-by-1-inch face. The banks of five wires are arranged one on top of the other, with the wires enclosed in a metal sheath inside the concrete.

The prestressing process consists of gripping each of the stressing blocks with mechanical fingers, and pulling the five wires at once with power from a hydraulic piston. The tension is built up in several increments until the full working load is applied. Prestressing equipment was relatively simple. It consisted of a Vickers Hydraulic Power Pack pump, driven by a 10-hp motor; a 5-gallon hydraulic reservoir full of Shell clavus oil 29 for the hydraulic system; a 1,000-pound pressure gauge; an International UD-14 engine-driven Palmer generating set for power; a Hannifin hydraulic piston and cylinder, and a small 3-ton Yale chain hoist to support it.

After the wires were prestressed, the metal sheath was grouted through holes in each end of the main stressing plate.

One of the things about this bridge which called for the most skill and care was the "big lift": the actual movement of the girders to final position. It was easily the most difficult problem of the project, because of the possibility of damage to the members.

Heavy A-frames with 6-by-6 fir-timber softeners under each end of each girder were installed and bolted into position to cushion the shock of setting the girders down. The slim, stressed girders were so flexible that lateral stiffeners also had to be used to minimize whip. Timber outriggers at midpoint, with steel cables stretched over their ends from each end of the girder, afforded some stiffening protection.

Crane Work

Three 30-ton Lorain Moto cranes made the lifts. The girders were carried as low to the ground as possible, and set near the abutment on the south side of the Arroyo Seco channel. Then a crane moved down into the channel bottom and, working with the companion crane at the opposite end of the girder, moved each member to position. Huge steel lifting-eyes, poured in place with the concrete, permitted a crane at each end to move the girders. The third machine used was a stand-by unit.

U. S. Cities Can Participate In International Municipal Affairs

FOR a modest sum, American municipalities can now individually participate actively in international municipal affairs and make a real contribution to the preservation of free institutions and the extension of democratic local self-government throughout the world.

The August 1 issue of the *United States Municipal News*, published by the United States Conference of Mayors in Washington, D. C., is devoted to this message. The issue describes the two leading international organizations, the International Union of Local Authorities, founded in 1913, with permanent headquarters in The Hague, and the Inter-American Municipal Organization, organized in 1938, whose permanent headquarters are in Havana, Cuba.

The American Committee for International Municipal Cooperation, organized in 1932 and reorganized in 1950, is a federation of the 17 principal municipal organizations in the U. S. for the purpose of fostering international understanding, technical interchange, and friendship among the municipalities of the world. It supports directly out of its own funds and enlists the support of U. S. cities in the two leading international bodies.

The following American cities have affiliated already with one or both of these organizations: Baltimore, Birmingham, Chicago, Detroit, Grand Rapids, Houston, Jackson (Mich.), Memphis, Miami, Milwaukee, Mobile, New Orleans, New York, Newark, Norfolk, Pasadena, Pittsburgh, Richmond (Va.), Shreveport, and Tampa.

A combined membership in both the International Union of Local Authorities and the Inter-American Municipal Organization, entitling cities to all the privileges of membership including publications and participation in international congresses, can now be secured in accordance with the following schedule of minimum annual fees. Remittances should be made to the order of "American Committee for I.M.C." and mailed to 1313 E. 60th St., Chicago 37, Ill. All funds received will be transmitted to the International Secretaries at The Hague and at Havana.

Population of City	*Combined Membership*
Up to 100,000	$ 50.00
100,000 to 300,000	100.00
300,000 to 500,000	200.00
500,000 to 1,000,000	300.00
Over 1,000,000	400.00

MANY CITIES are beginning to realize the value of an auditorium for community use and as a convention-business attraction. But many existing municipal auditoriums are operating at a loss or are just breaking even. Others have rentals beyond the reach of their civic organizations. These losses can often be traced to original faults in the design of a structure, poor maintenance schedules, and improper supervision and administration of the existing facilities and personnel. Cities planning to build auditoriums should check carefully. Plans that may look good on paper may not be so good from a practical operation viewpoint.

B. C. M.

How NOT to Design an Auditorium

By BENJAMIN C. MOORE
Superintendent of Operations
Onondaga County War Memorial
Auditorium, Syracuse, N. Y.

A FULLY EQUIPPED auditorium for an average-size city may cost several million dollars—depending, of course, on the type and size of the structure. But despite such large outlays of hard-to-get tax money, it is amazing how many auditoriums are poorly designed. Excessively high initial costs, inadequate facilities, cumbersome mobile equipment, badly conceived locations, overloading of personnel, and lack of operational know-how account for the fact that municipal auditoriums are often white elephants from a financial point of view.

When somebody, generally a layman, has an idea for building an auditorium in his community, the most popular thing to do is to send out a questionnaire. The auditorium design is then worked out, based on the replies, regardless of whether or not they fit the local situation. Another typical method is to copy a near-by auditorium, usually repeating all the mistakes. Still another approach is to depend entirely upon suggestions from local groups, including athletic and music organizations, who often have ideas that conflict.

Too many of these people think all they need in an auditorium is one main hall—and they usually want it several times larger than is necessary—when 95% of the attractions could be accommodated in much smaller halls. This means that a great deal of money is spent and the cost of upkeep for the larger hall is needlessly excessive.

A self-sustaining auditorium must be designed for all-purpose use to accommodate every conceivable type of event. Equipment must be designed and selected on the basis of ease and speed in setting it up, operating it, and taking it down. Regular employees must be kept to a minimum, because of the seasonal character of many of the auditorium's functions.

A case example will serve to illustrate some of the mistakes that are commonly made. The writer was called in to help a community that was in trouble because of a combination of errors on its auditorium project. The auditorium was intended to be an all-purpose building, yet it required two additional bond issues before it could be so considered. The project involved an outlay of $3,000,000, but an estimated 17% of this amount was wasted because of poor design and inadequate facilities. If expert advice had been sought before the first bond issue was floated, many headaches and embarrassments for the municipal administration and auditorium committees could have been avoided.

Some Basic Errors Noted

These were some of the basic errors and defects noted by the writer:

Only four drinking fountains were proposed for a building with a seating capacity of 6,000 people.

Doors leading to the arena were only 7 feet high (not enough for an elephant, for example), and they were not wide enough to get in a standard automobile for an automobile show.

The vehicle-door to the exhibit hall was not large enough for big trucks to enter and unload exhibit merchandise.

Only one-half of the needed storage-room space was provided for set-up equipment and chairs. Doors leading to storage space were too narrow to move in standard trucks loaded with portable equipment.

There were no electrical outlets in the main auditorium for trade-exhibit booths; no drains in the arena or the exposition-hall floor, and no hot or cold water and gas connections needed for exhibit purposes.

Architects' plans were for iron or wood folding chairs on the main-arena floor. The writer changed this to form-fitting padded three- and four-unit portable theater chairs.

No provisions were made for dressing-room equipment, such as mirrors, counters, and wall lighting.

Toilet facilities for maximum capacity

A WELL-DESIGNED AUDITORIUM AND COMMUNITY CENTER

St. Louis Municipal Auditorium and Community Center building, a flexible, all-purpose structure, was dedicated in 1934. The building contains an opera house, seating capacity 3,565; a main auditorium, seating 11,500; an exposition hall with 100,000 square feet, and numerous small units (19), seating from 50 to 1,000. A 32-ton soundproof curtain separating the dual stage means that a symphony concert can be held in the opera house on one side, wrestling or other sports events can be held simultaneously in the main auditorium, and there can be meetings in four units seating 1,000—all without interference.

were just one-third of the standard amount necessary. Moreover, they were located in corridors only at the front end of the arena, instead of on the side, thus creating a bottleneck when people attempted to reach them during show intermissions.

Only one concession stand was provided, with a 12-foot-long counter. This also was in the front foyer of the main arena. The writer created other concession outlets in corridors at the side of the arena by stopping the walling-in of spaces under seat risers.

The air-conditioning system is noisy, and during concerts and meetings must be shut off completely.

A 25-set intercommunication system, costing $20,000, had been purchased, but proved useless in this type of structure.

Expensive and light-colored rubber tile floor covering was installed on ramps and corridors. Initially good looking, it is proving impractical because of its slipperiness on ramps, and the wear and tear from trucks and set-up equipment constantly being moved in and out.

Important stage equipment had been overlooked. Fortunately, this was added by eliminating from the architect's estimates $10,000 for unneeded stage curtains.

Corridors or the horseshoe leading to the arena were only 10 feet wide. Minimum width for a 6,000 seating capacity should be 15 feet. The result is that there is not enough room during intermission for patrons to get in and out quickly—meaning discomfort and inconvenience to the public and low income from concessions. Moreover, narrow corridors make it doubly difficult to make turns into arena doorways with trucks loaded with such equipment as basketball flooring, scoreboards, chairs, etc.

Ceiling height of the corridors is only 8 feet, 6 inches, without ventilation intake or exhaust. When they are crowded, the air problem is serious.

Four permanent ticket booths costing $3,000 were built for use in the side lobbies. Ticket booths should have been portable so that they could be converted for possible use during conventions as meeting rooms.

Structure limits function. Mistakes in architecture are either permanent or expensive to rectify. They often last longer than their perpetrators and they haunt all future users of the building in two ways: by the presence of the faults and the absence of the good features which might have been in their stead. Suffice it to say here that mistakes are chiefly the result of lack of information, misinformation, or wrong thinking regarding over-all functions of an auditorium—and that some of these mistakes are so stupid as to tax credulity. To attempt to place the blame for mistakes is pointless when, as we have seen, so few laymen have any comprehension of theater and arena practice, and the planning of auditoriums is in their hands. To become familiar with auditorium practice and operation, and to learn how it determines the size, shapes, arrangement, and equipment of auditoriums, experienced advisory service must be obtained. This seems a reasonable way to prevent similar mistakes in the future.

EDITOR'S NOTE: A useful reference is *Municipal Auditoriums*, by Farrell G. H. Symons, Public Administration Service, 1313 E. 60th St., Chicago 37, Ill. 1950. 78 pp. $2.50.

Summary and Status of State Redevelopment Legislation

THE REDEVELOPMENT Information Service of the National Association of Housing Officials (815—17th St., N.W., Washington 6, D. C.) reports in a recent newsletter that during the past legislative sessions, seven states adopted enabling legislation specifically authorizing local public agencies to undertake slum-clearance and urban-redevelopment projects, and six states failed to pass such measures. There are now 34 states that have slum-clearance and urban redevelopment enabling legislation, as well as the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Virgin Islands.

The states that enacted legislation during 1951 are Delaware, Kansas, Maine, Missouri, Nebraska, North Carolina, West Virginia, and the Territory of Alaska. Of the 14 states without enabling legislation, such legislation was introduced but failed to pass in Arizona, Iowa, New Mexico, Oklahoma, Texas, and Washington.

Redevelopment Legislation

The Urban Land Institute of Washington, D. C., has classified the various forms of state legislation now existing into three groups, as follows:

GROUP I. *Redevelopment Corporation Laws.* These bills encourage large private financial institutions to participate in slum clearance through the construction of housing projects.

Passed in 13 states (Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Missouri,[1] New Jersey, New York, Virginia, and Wisconsin).

GROUP II. *Housing Redevelopment Laws.* These bills enlarge the powers of local housing authorities making them the development agency. The emphasis is on the housing of the low-income group. Control of housing authorities will still be largely through the Public Housing Administration in Washington, D. C.

Passed in 15 states (Alabama, Arkansas, Florida, Georgia, Illinois, Louisiana, Maine,[2] Massachusetts, Minnesota, Nebraska,[3] New Hampshire, Oregon, South Carolina, Tennessee, and Virginia).

GROUP III.[4] *Redevelopment Land Agency Laws.* These bills establish new redevelopment agencies which are controlled wholly by the local government, except in the case of the District of Columbia, where the Congress acts as the municipal legislature and two members of the redevelopment agency are appointed by the President. They may have power to assemble land, issue bonds, and sell or lease the land to private enterprise in accordance with an approved comprehensive plan.

Passed in 15 states (California, Colorado, Connecticut,[5] District of Columbia, Illinois, Indiana, Maryland, Michigan, New Jersey, Ohio, Pennsylvania, Rhode Island, South Dakota,[6] West Virginia, and Wisconsin).

[1] Missouri has also adopted a state constitution which authorizes any city or county operating under its constitutional charter to acquire areas for redevelopment.

[2] Maine passed, in the 1951 session, legislation to permit the housing authority of Portland to initiate projects, but subject to local referendum.

[3] Applicable in Omaha and Lincoln only.

[4] Several bills related to this group, called "short bills," enabling municipalities to acquire blighted and slum areas for redevelopment by private or public bodies, have been passed in Illinois and New York.

[5] Connecticut law permits a housing authority to be named as the redevelopment agency.

[6] South Dakota also gives the redevelopment agency powers ordinarily vested in a housing authority.

Effective New Local Planning Power

A SUBSTANTIAL new planning power has been granted to municipalities in New Jersey as a result of approval of an amendment to the Planning Enabling Act relating to the transfer of lots in unapproved subdivisions.

The new provision removes the clause allowing a $100 fine for each subdivision lot illegally sold and substitutes the right of injunctive remedy by the municipality to set aside an illegal sale. In this way it actually places the title under question and also allows the placing of a lien against the entire subdivision.

The language of the amendment reads, in part:

"In any such action the transferee, purchaser or grantee of such land may be made a party or, if not made a party, may intervene therein, and the said transferee, purchaser or grantee shall be entitled to a lien upon the whole parcel, tract or plot of land from which the subdivision was made to secure the return of any deposit made or purchase price paid, and also, a reasonable search fee, survey expense and the title closing expense, if any. The . . . court shall have full jurisdiction to afford the said relief to the municipality and to the said transferee, purchaser or grantee . . ."

The Long Beach Health Center

By ROBERT C. CREIGHTON
Manager, Division of Administration
Department of Public Health
Long Beach, Calif.

RECENTLY completed at a cost of $508,593, exclusive of land and furnishings, the new Long Beach health center is a model of excellent modern and functional design, evolved after considerable cooperative planning.

The building is basically a two-story structure, located four miles north of the City Hall in the geographical and population center of this fast-growing city. Plans for the building evolved from ideas contributed by a large number of individuals: the architect, Francis J. Heusel, members of the Health Department staff, engineers from the City Engineer's office, and consultants from the State Department of Public Health.

Architectural Plan

The second floor is set-back, with a small third floor on which are located utility rooms and a room where laboratory animals are kept. The building contains approximately 33,000 square feet of floor space, and is constructed of steel frame with reinforced concrete walls. Arizona flagstone and plate glass have been used extensively both on exterior and interior surfaces.

The health center was planned around the basic services provided by the health department, with activities grouped into zones. On the first floor, an information desk and central clerical area face the main entrance and lobby. This office is occupied by a receptionist and four clerks who perform the clerical work for the Division of Preventive Medical Services. Two large wings extend at right angles from the main corridor on either side of the central clerical office.

One wing houses the activities of the Division of Preventive Medical Services, the division responsible for the control of communicable diseases, including tuberculosis and venereal disease. This wing contains six examining and treatment rooms, four offices for interviewing patients, an x-ray room, a dark room, and eight dressing rooms for persons being x-rayed. The second

The Long Beach Health Center and (top) a close-up showing its attractive main entrance.

wing, slightly smaller in area, contains four examining rooms and a classroom for maternal and child-health services, two fully equipped dental offices, and two clinic rooms used for the examination of civil-service applicants. Also located on the first floor, along the main corridor, are the offices of the health education and vital statistics divisions, and the public-health library and laboratory. The latter contains a waiting room, offices for the laboratory director and the veterinarian, and separate rooms for laboratory procedures involving serology, bacteriology, sterilization, milk and water testing, and washing of equipment.

An auditorium with a seating capacity of 269 persons is located at the south end of the building, attached to it by a glass-walled lobby. The auditorium may be entered from the outside as well as from the main building, thereby making it available for the use of community groups after office hours, when the main building is closed.

The offices on the second floor are occupied by the health officer, his administrative staff, the Division of Public Health Nursing, and the Division of Environmental Sanitation. The nurses and sanitarians share a conference-classroom for purposes of in-service training. Also located on the second floor is the employees' lunch room and a ladies lounge.

Adjustable to Future Space Needs

The building was designed on a 4'-0 module, and rough ceilings were installed before the placement of partitions in order that the latter might be adjusted to meet future space requirements. A self-service elevator runs to the third floor.

Heating is provided by a forced-air system, thermostatically controlled in separate areas, and designed so that air conditioning can be installed at a later date, should it be needed. Lighting is furnished by fluorescent fixtures, flush with the ceiling, providing 35 foot-candles of power at reading level. Natural light control is available by means of exterior horizontal louvers, adjustable by crank from inside the building. All rooms contain laterally sliding plate glass windows. Another striking feature of the health center is the use that has been made of bright colors throughout the interior. The basic colors are green, yellow, coral, and chartreuse.

The building's exterior appearance is enhanced by grounds that were planned by a landscape architect. Two large lawn areas and a distinctive arrangement of trees and shrubbery set off the front of the building. Parking areas to the rear and side of the building will accommodate 80 cars.

High-School Students Aid City Planning Commission

By JOSEPH E. WALKER
Senior High School
Bradford, Pa.

A ZONING ordinance would keep that new factory from being built near the valuable homes on Second Avenue."

"I thought we had agreed to use that vacant area for a playground."

"No, the creek-widening project will cut through the middle of this section."

A stormy session of city council? Guess again! That is the "problems of democracy" class at Bradford (Pa.) Senior High-School working on its city-planning project.

For the past six years, successive senior classes have studied phases of city planning as a part of their social-studies work.

This project began with a request from the City Planning Commission for some help in publicizing the need for a master plan for the city. The public was not interested enough to provide funds for the planning. Members of the Commission believed that the schools might do several very important jobs in this connection:

1. Educate the people of the community in the desirability of planning for Bradford.
2. Establish at the school a center of information about planning for Bradford and activities in other cities.
3. Gather the mountains of non-technical information that is necessary before any planning can go forward.

The school agreed to undertake a long-range project, possibly covering 10 years or more. Each class would study some special facet of the city plan and make recommendations. Its work would be crystalized in the form of maps or consolidated reports to be handed on to succeeding classes. Eventually an attempt would be made to correlate the work of all the classes and to put it in visible form by the preparation of a large-scale relief map.

Keeping Work Practical

No one has been so foolish as to believe that either teachers or students possess the technical engineering knowledge required for formulating a workable plan. Members of the planning commission and the city engineer have been called upon for advice and help at all steps, to keep the work on a practical level. But the primary task of the school has been to arouse a community interest by constantly publicizing the students' work on planning. Each year the school is sending out 300 graduates who will have some knowledge of the needs of our city and the problems involved.

Those needs and problems were very easily discovered when the project got under way in the autumn of 1945.

Bradford had existed for a number of years as a small lumbering village, when the discovery of extremely productive oil-bearing sand suddenly mushroomed it into a roaring city. Jerry-built houses grew magically out of the mud. Streets pushed out with no plan to direct them.

Unplanned Growth

Unplanned growth naturally created many problems that still exist. Streets are too narrow for modern traffic. There are no through streets across town in any direction. Streets come to a dead end in most inconvenient places. With one exception, all streets coming to Main Street end there and dump their traffic in congested business areas. Most bridges are too narrow, and there are neither bridges nor underpasses for any railroad crossing in the city. Much of the cheap housing of the boom days still exists and contrasts sharply with the many beautiful modern homes and office buildings. No zoning is practiced except in the new residential areas. The city's creeks, which drain from the steep sides of the surrounding hills, have covered considerable areas of the city with flood waters four times in the past decade. Other problems demanding attention include placement of public buildings and provision for both indoor and outdoor recreational facilities.

A questionnaire was prepared and sent to about 500 persons in the community. From the information received and more collected by the students, the various classes prepared a guide for future classes in the more detailed study of each section.

Succeeding classes have so far considered land use in the city, city zoning, streams and bridges, and flood control. Streets and transportation will probably be the subject of the next study.

Two members of the faculty have prepared a manual for the use of each student. This includes the results of the first four years. It also is a guide for the study of city government.

Many more people than ever before have been made aware of Bradford's problems and the need for planning.

AUTHOR'S NOTE: A more detailed discussion of the subject of this article is scheduled for publication in the September 1951 issue of the *Journal* of the National Education Association.

A Double-Duty Municipal Library

The municipal reference library in Toledo, Ohio, is reorganized for greater use by local officials

By DONALD E. BANCROFT, Jr.
Municipal Reference Librarian
Toledo, Ohio

FOR many years, municipal reference libraries have been quietly growing up in the larger and more progressive cities of the United States. Often unknown outside the library profession, or the individuals engaged in governmental research, they, nevertheless, have managed to survive and grow. Their growth has been along various lines of emphasis, each city maintaining strong points of reference on those problems most bedeviling and perplexing to it.

For example, in some cities the problems of the law department become part and parcel of the library's problems; in others the technical aspects of police work become important. It must also be admitted that more progressive and alert departments demand and receive more service than those that are content to drift along in established patterns.

In Toledo there is a unique set of circumstances. The *Toledo City Journal*, published by the Commission of Publicity and Efficiency, is a combined public-relations, printing, inquisitorial, and research organization. While depending on the city government for its appropriations and facilities, the charter-established commission is organized so as to function independently of the municipal administration. This provides greater public acceptance of its work and greater perspective in its treatment of problems. For many years the need for an organized and functional library for this operation was felt. Eventually it became obvious that it would be necessary to put the problem into the hands of a trained librarian if order were to come out of increasing chaos.

Revitalization of Library

This decision was made in 1949, and in the fall of that year the work of rehabilitation was started. At that time there was no library in the generally accepted sense of the word. Material which had come in over a period of years—dating back as far as 1916—was piled on shelves, hidden in old boxes, and buried in the drawers of old desks under remnants of several attempts at formulating systems of cataloging or arranging. It was necessary, first of all, to sort this and retain what was valuable and get rid of what was not. This initial pruning process, over a period of months, reduced the size of the library by one-third.

It became obvious, as the work progressed, that new equipment and rearrangement would be necessary. We also saw the need of long-term plans for acquiring printed matter and tendering service to the various departments of the city. In line with this, new shelving, desks, and other equipment were purchased. Plans were made for a more comprehensive covering of the municipal-governmental field than had heretofore been done.

The author, a graduate of the University of Michigan library school, is, as municipal reference librarian, devising a library to fit in with governmental work in the City of Toledo.

Pauline Barsch, editorial research assistant of the staff of the Commission of Publicity and Efficiency, uses the index to find the photos needed for a municipal publishing job.

Microfilm Equipment Available

The library was fortunate in the fact that complete microfilm equipment had been acquired before the expansion program was begun. This included a camera, developer, and viewer. Like most small libraries, space was at a premium and it was possible, by this medium, to reduce a great quantity of material to a small drawer of microfilm rolls. While not entirely satisfactory from a prolonged-research viewpoint, because of difficulties in handling and in cataloging, it did release the needed space.

Toledo's new library in its functioning form has evolved a pattern that is as unique to its situation as other municipal reference libraries are to theirs.

First of all, it must function as a partial newspaper library with a strong emphasis on local-government functions. The weekly issues of the *Toledo City Journal* require a surprising amount of checking, establishment of fact, background material, and odds and ends of questions not ordinarily associated with government. All of this material must be available to meet the printing deadlines. Often a better source, which the library cannot afford, may be available; but this availability lies beyond the printing deadline and is, therefore, useless. In such cases substitutes must be found which will be satisfactory, if not perfect. If a talk is to be prepared or an article written for use two hours hence, little time can be lost in assembling material, photos, and historical and documentary background.

Second, there was a problem of what to do with the several hundred photographs which had accumulated over the years in the publication of the *Journal*. These were valuable, both from a monetary and a research viewpoint. People were involved who kept popping back into the news, scenes of governmental projects in by-gone days were used

again for progress comparison, and often pictures revealed details that had been forgotten even by men who were a part of the scene. The Toledo library as now arranged, in most instances, will turn up in twenty minutes both pictures and material for a talk or article on playgrounds or sewers, for example.

As a result of this continuous demand, a method was developed for integrating the pictures with the card catalog for printed material. It is now possible to check quickly both the printed material available on a subject and the photographs which may supplement it. While picture files are by no means unique, this system, tailored to municipal needs, has proved to be a strong new research ally.

A third problem is that of the publication of the Municipal Code. It is in the process of preparation, section by section, and chapter by chapter, and requires a good deal of time. All legal aspects of the Code are handled by the Law Department, but many of the final methods of printing and distribution are handled by the library. Type used in the *City Journal* to give legal publication to a code amendment is used to revise loose-leaf code pages to conform with these changes. In connection with distribution of the codes, other documents printed by the Commission of Publicity and Efficiency are distributed in the same manner.

City Officials Make Greater Use of Library

As the library has become better integrated and has been capable of extending its services, more of the city officials and employees have made greater and greater use of it. Unlike most public libraries, the vast majority of the questions are telephoned in, and answers, or the material desired, are sent out to the individual or department requesting them.

Questions cover a wide range, from the rank and title of a United Nations official to general personnel procedures. In the belief that a municipal workshop and research library is extremely important to public administration, emphasis has been given in this reorganization work to laying a broad, sound foundation.

The Commission of Publicity and Efficiency in recent years has been extremely fortunate in the monetary support it has been given by the progressive City Council and city administration, headed by Arnold V. Finch, City Manager. The general reorganization of the work of the Commission of Publicity and Efficiency, covering the library, research, and publishing activities of the city, has been carried out by Russell Bremer, Commission secretary for the past 10 years.

Monroe City, Utah, Obtains Electric Power

Above, left: The plant with the impressive background of the Rocky Mountains. Above, right: Gathered around the new diesel-electric set in Monroe City, are, from left to right, City Electrician Karl Bohman; Councilmen Winget, Olsen, Melville and Yergensen; City Recorder Winget; Mayor C. C. Bell, and onlooker Reynolds.

SIX THOUSAND FEET above sea level, in the National Fish Lake Forest Range, is the community of Monroe City, Utah. Completely bypassed by electric utilities and rail and water traffic, its 1,500 residents nevertheless enjoy low-cost electrical convenience and have virtually no disruption of service.

This small Western town didn't always have a modern power plant. Prior to 1934, power was supplied by a water-driven hydro plant with 110-kw capacity, which did not furnish enough power when water fell short or ice formed in the winter. In 1934, a Caterpillar engine providing power for a 50-kw generator was added and, in 1937, another hydro water plant was added with a capacity of 125 kw. Overburdened, but struggling through the war years, the two hydro plants and the diesel were supplemented in 1944 by a larger diesel-electric set, making a total capacity of 360 kw. During 1945, the combined plant produced 522,000 kw-hrs. with a peak load of 165 kw; in 1946, the same equipment produced 720,000 kw-hrs. with a peak load of 191 kw; in 1947, it produced 982,762 kw-hrs. with a peak load of 230 kw.

Because of the increasing demand in 1948 for more power, the smaller engine was traded for a larger Caterpillar electric set (75 kw), and during the year the two hydro plants and two diesels produced 1,170,860 kw-hrs.; in 1949, this equipment produced 1,435,-120 kw-hrs. with a peak of 365 kw, this peak within 20 kw of top production.

Monroe City, however, was still not satisfied. In order to relieve overburden and give assurance of service, on August 6, 1950, Mayor C. C. Bell pushed the switch that sent out current from a newly installed Caterpillar D397 diesel-electric set. Top capacity for the plant is now 646 kw.

Clearing Up the Debris

How to make streets usable after an atomic attack

INTERESTINGLY enough, a principle that governs the operation of streets in a municipality for one phase of its duties often governs many others. Those who know city street systems understand that roughly 90% of the traffic travels on about 10% of the streets. This 10% constitutes our arterial system. As long as it operates, the city can function. It will work better, of course, when the remaining 90% goes back into operation, but the 10% must work in order for a city to have any vitality.

Therefore, were a city to suffer an attack by an atomic bomb, the city officials must see to it that a system of roadways equivalent to this 10% be put into operation as soon as possible. This is fundamental, no matter what disaster strikes a city.

Assuming an air-bursting atomic bomb, the problem of clearing away debris should be less troublesome than the one facing cities during the bombing raids of the last war. There should be no complications from incendiaries. There will be no bomb craters, nor "duds" that must be inactivated. There will be no delayed-action bombs, no fragmentation or anti-personnel bombs such as the dreaded "butterfly" type. All this will be poured into one great explosion, over in the tiniest fraction of a second, spread over a great area.

How great the area and how complete the destruction? A quick air survey will tell the story. At least one city has arranged for an immediate aerial survey following such a blast. Prints of this can be obtained in a matter of a few hours, and would be invaluable in directing clean-up work in an orderly fashion, and in locating streets that could serve most easily as the important arterial street system.

How Much Clearance Needed?

Of course, in this system, what basically is needed is an open traffic way. Something 15 to 20 feet wide would help for a beginning. Needless to say, only essential vehicles will be using it. Therefore, what street clearance is done will first be devoted to pushing the debris aside to let the essential vehicles through. Here, of course, bulldozers and heavy equipment come into their own.

All the studies, critiques, and theoretical "practices" in our large cities have emphasized the need for knowing where this heavy equipment is and where the operators are that will run it. Many have used contracting firms as district operating bases. All tie themselves into larger state plans for civil defense so that supplemental equipment can be called into action if needed. Unfortunately there are no good operating figures to indicate how many bulldozers or cranes would be required to open a street in the target area. Nevertheless, to be orderly, one does need certain fundamentals. One is a place to put the debris. Undoubtedly all of it can't be pushed aside. Some will have to be hauled away, and the location of as many disposal spots as possible would be of great help.

Raze Dangerous Walls

Another factor that some consider and some do not, is that the streets may have to be littered with more debris before cleaning can take place. Buildings that have suffered such a shattering blow will have many standing walls that are dangerous and will have to be knocked down. So demolition crews will have to take their place in the work and remove them.

The techniques developed by such demolition crews in the last war, using shaped charges and cutting charges to knock down such dangerous walls, can be put to good work here.

Obviously, organization is paramount, and a chain of command that will work when key personnel becomes "inactivated" is equally invaluable. The old military axiom that a poor order well executed will triumph over brilliant strategy half carried out is equally good here.

An A-Bomb Checklist

Do you (responsible official) know—	*Yes*	*No*
that A-bombs are getting more effective (deadly) every year?	___	___
what a bomb would do to your city?	___	___
where the equipment is that will clear the rubble from your streets?	___	___
where it will be at A-hour?	___	___
where the operators will be at A-hour?	___	___
in what planned order you will call for this equipment?	___	___
whether you can get a quick air photo of your city after a blast to make your work more orderly?	___	___

If you can answer these questions affirmatively, then this phase of the civilian defense of your community is in good hands.

New Model Emergency Building Code Available

APPROVAL of a model emergency building-code ordinance which will permit local building officials to authorize the use of alternate materials and techniques during the present emergency, when certain required materials are in short supply, was announced in August by Raymond M. Foley, Administrator of the Housing and Home Finance Agency.

The ordinance was written by HHFA officials and reviewed and unanimously approved by HHFA's Advisory Committee on the Administration of Local Building Regulations, a group composed of building officials and specialists in municipal regulations from various parts of the United States. The ordinance will be printed and made available for public distribution in the near future.

Mr. Foley hailed the document as "an outstanding example of voluntary cooperation between local and national officials to achieve a major contribution to the national defense program."

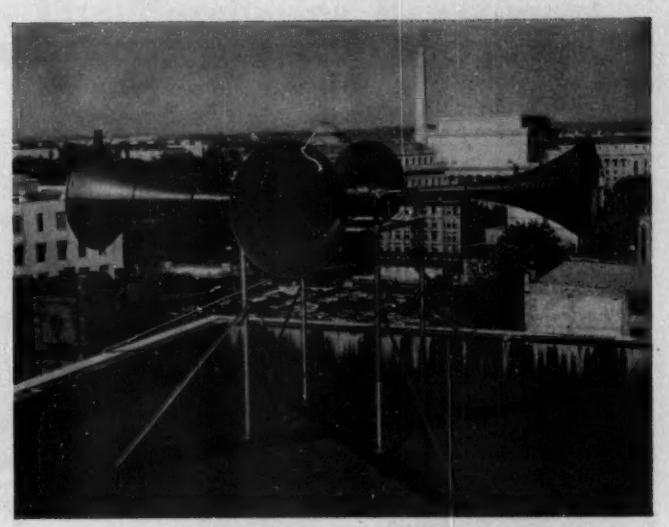
The introduction points out that the ordinance has been prepared as a guide and suggestion for action to city councils, mayors, city managers, and building officials of cities whose building codes do not permit authorization of alternate materials and methods in times of emergency. Cities wishing to take such action would have to adapt the ordinance to fit the relevant portions of state laws, municipal charters, and local building codes.

Formal title of the ordinance is, "An Emergency Ordinance Amending All Building, Electrical, Gas, Mechanical, Plumbing, and Related Ordinances; Authorizing the Use of Alternate or Substitute Materials and Methods during the Period of National Emergency."

Electronic Air-Raid Warning

in the nation's capital

By H. P. GODWIN
Office of Civil Defense
Washington, D. C.



One of 30 amplifiers controlled by FM receivers.

THE 34 supersonically controlled amplifiers which constitute Washington's air-raid-warning system are an important "first" in civil defense. Each amplifying unit, which consists of four horns pointing to the four points of the compass, is designed to produce 95 decibels of sound within a radius of half a mile, and 75 decibels within a radius of one mile.

The amplifiers are activated through special FM receivers by a 250-watt FM radio transmitter located in the District of Columbia Command Center.

One of the advantageous features of the system is that it may be used for voice transmission as well as the air-raid signals. This permits oral instructions or other intelligence to be broadcast to the entire city from the Command Center before, during, and after air raids. The FM receivers which activate the amplifiers are so "coded" that, while they can pick up voice broadcasts at any time, they will not broadcast the air-raid signal unless acted upon by a special secret supersonic impulse. This feature makes it impossible for sabotage in the form of false alarms.

The Federal Communications Commission allocated three radio frequencies in the 40-to-50 megacycle band to the District of Columbia air-raid-warning system. One frequency "triggers" the special FM receivers which activate the amplifiers. A second frequency affords radio communication between the Command Center and the Control Centers, making the system independent of telephone land lines if necessary. The third frequency is for communication with mobile equipment and "walkie-talkies."

A special generator installed in the Command Center makes the communication system independent of local power which may fail during a bombing.

John E. Fondahl, Director of Civil Defense for the District of Columbia, has invited the adjacent communities in the metropolitan area to install amplifiers which can be activated by the District system. At the same time, private business firms and apartment houses have been told they could install their own amplifiers if they desire, and, thereby, be hooked up to the District warning system.

After a low bid of $190,926, the contract for the installation of the system was awarded to RCA. Installation began in December 1950, in the downtown business section of the city, where four amplifiers serve to alert the principal government buildings, including the Capitol and the White House. These four amplifiers were installed in May 1951. The entire system, including the 30 additional amplifiers, was operating by September 1951.

Seattle Studies Air-Pollution Problems

A FOUR-WAY air-pollution study is under way through the joint efforts of the city engineering department of Seattle, Wash., and the University of Washington. The study will synchronize with other work by the University of Washington on this subject. The University is furnishing equipment and will perform analyses on sampling specimens; city departments have the responsibility of servicing the project units.

Among the items furnished were 2½-gallon jars placed at 27 dust-settling stations throughout Seattle. Jar collections are made about once every three weeks, and are handled by the city health department, which regulates the proper water level. Jar specimens, when properly labeled, are returned to the University where laboratory analyses determine the weight of material deposit in a ton-per-square-mile area, the percentage of organic matter, and the parts per million of chloride and sulphate.

A second part of the program consists of three sampling pumps, developed by the University of Washington and supervised by bridge tenders who change filters daily. Pump filters were pre-packaged in dated envelopes with station identification by the University to simplify filter-handling problems. Upon return to the University, the filters, which retain all solid matter, are subjected to analysis.

During spare moments, bridge tenders perform related charting on Ringleman charts (a third part of the program), whose varying shades of gray indicate which industrial areas produce the maximum smoke.

Finally, a Thomas continuous sulphur dioxide meter, a costly instrument owned by the University, was installed to graphically record parts per million of sulphur dioxide in the air. In addition to these measures, the Engineering Department is working on auxiliary techniques, one being formulated to determine the total ultra-violet light reaching the atmosphere, and the amount of fluorides.

The city's portion of the work is being directed by R. W. Finke, City Engineer, and is being financed by an appropriation of $7,500.

Concrete-Lined Drainage Ditches

By A. A. LYONS
Drainage Engineer
Department of Public Works
Shreveport, La.

PHOTOS BY J. F. MCANENY STUDIO, SHREVEPORT, LA.

Before and after views of Sycamore and Milan Streets.

Shreveport, La., improves flow gradient and drainage-channel operations by a concrete lining

THE City of Shreveport, La., on the banks of the Red River, is a fast-growing city of 126,000 population. The general terrain is broken with 100-foot variations in elevation through various parts of the city, and natural drainage ditches carry off storm water in five directions.

Recent development of subdivisions and construction of paved streets contributed to a larger storm-water runoff and increased velocities of flow. This caused serious erosion of the drainage ditches. What were small ditches before development, were fast becoming gullies. The city had no available funds to be used for the improvement of this condition, and abutting property owners alone could not stand the cost.

Voters Approve

Drainage and health conditions became so serious that in 1947 the voters were asked to approve a drainage-program item of $900,000 in an improvement bond issue. This amount proved to be less than half the estimated cost required for enclosing these drainage ditches. It was necessary, therefore, to revise the plans in order to stay within the amount of money available. After an extensive engineering study, it was decided to construct only enclosed sewers where the ditches crossed the street and to line the remaining portion of the ditches with portland cement concrete.

No major changes in the alignment of the main ditches were made because of existing buildings and improvements. Ditch cross-sections were designed to conform as nearly as possible to existing channel sections. In some cases this meant wide, shallow ditches and in other cases narrow, deep ditches. As a result, the side slopes varied from ½ on 1 to 2 on 1; bottom widths from 2 to 22 feet, and height of banks from 2 to 5 feet. A maximum grade of 0.2% was maintained by providing steps in the invert of the channel.

Existing ditches were reshaped by cutting or filling to the designed cross-section and then lined with portland cement concrete. Where favorable soil conditions were encountered, a 3-inch depth of slab was used, reinforced with 44-pound mesh. In unfavorable soils a 4-inch slab reinforced with 62-pound mesh was used. Doweled transverse joints were provided at 20-foot intervals. On the smaller ditches the inverts and sides were paved in one operation. On the larger ditches it was found that better construction could be achieved by placing only half the lining at one time. A longitudinal concrete grade beam 6 by 12 inches, reinforced with two ⅝-inch circular bars, was constructed down the center line of the ditch. The longitudinal joint formed by half-at-a-time construction was centered on this grade beam. Dowels were also provided to tie the two halves of the slab together. To reduce hydrostatic pressure behind the lining, weep holes were placed on 10-foot centers on each side near the paved invert.

From 1947 to the present time, the city has improved 18 ditches, totaling 4.31 miles, in this manner. The cost of lining these ditches with concrete has varied from 45 cents per square foot in 1947 to 80 cents per square foot in 1950.

Improvement Cost Justified

The cost of this improvement has been justified by improved appearance, increased property values, low maintenance costs, and, above all, improved sanitary and health conditions.

This work was done under the supervision of H. Lane Mitchell, Commissioner of Public Works. The writer was in direct charge of construction and design.

A Brand New City Purchasing Department

Greenville, Texas, builds up a big file of new catalogs as a nice tune-up for efficient municipal purchasing

By FRED W. HUBBELL
Purchasing Agent
Greenville, Texas

THE PROBLEMS of purchasing for smaller municipalities parallel those of larger cities whose agencies have been described in THE AMERICAN CITY's series of articles on municipal purchasing.

The city of Greenville (population, 15,000), seat of Hunt County, lies about 50 miles northeast of Dallas in one of the state's leading cotton-producing areas. Until recently, purchasing was decentralized. In 1950, Mayor John H. Miller and the City Council decided that the best interests of the city and its citizens would be served by centralizing all purchases, including those for the municipally owned and operated water and power plants. Organization of a centralized purchasing department is still in progress. Our experiences thus far are limited, but we know we are saving money, in spite of rising prices. Consolidation of requirements and the competition from a larger list of suppliers has effected many economies.

New Catalog File

To develop this larger list, and thus gain the advantages of a wider choice of products as well as better prices, we set out in December to build up an up-to-date catalog file. This would provide us not only with detailed product information, but with comparative specification data as well.

Our method of securing these catalogs and information may be of interest to others. We wrote to Alden Welch, Research Editor of THE AMERICAN CITY, asking for suggestions. He cooperated by furnishing us with envelopes addressed to nearly 400 vendors of municipal equipment, material, and supplies, and suggested an inquiry letter to be written on our letterhead. We followed Mr. Welch's suggestion, and *the response has been almost 100%*. In addition, in many instances the names and addresses of the nearest distributors were supplied so that we could obtain quicker service when in need of information, bids, or services. This service was of considerable value in our plans.

Incorporated in our centralized purchasing procedure is a method of expenditure control, for the various accounts and classifications, to make it possible to meet our budget appropriations.

Fortunately, distributors in our vicinity have been blessed with a backlog of the products we require, so there has been no serious difficulty in obtaining needed materials, supplies, and equipment. Now, however, "unable to supply" notices and extended delivery dates are making their appearance. For example, we were given a delivery date 10 months hence on a diesel-gas engine for our power plant. As our contribution to the times, we shall investigate substitutes, synthetics, and other "just as goods."

What Does It Cost to Operate Equipment?

THE CITY of Wheeling pays about $3,750 per month to maintain and operate 111 pieces of rolling equipment, according to Traffic Engineer Kenneth Dailey.

To operate a refuse truck costs 22 cents per mile, his records show. The cost of operating trucks used for other duties runs to 7 cents per mile; a passenger car, including police cruisers, which run continually on a 24-hour basis, 3½ cents a mile.

The city maintains a repair shop and gas station to care for these vehicles. Four of the passenger cars fueled and maintained by the city are owned by department heads, the city paying the pro-rated cost of fueling and repairing these cars. The city does not supply cars to all its department heads.

The city's Fire Department has 19 pieces of equipment. These include a squad car, two aerial trucks, ten pumpers, a pick-up truck for a mechanic, a fire boat, and four small civilian-defense pumpers. It supplies a car for the Assistant Chief, but none for the two Fire Inspectors.

The Department of Sanitation has seven Gar Wood Load Packers, an open truck, and a passenger car for its Superintendent.

The Street Department has 35 pieces of equipment: one bulldozer, two graders, two rollers, one shovel, three street sweepers, one Eductor for cleaning catch basins, one asphalt distributor, four sand spreaders, an air compressor, a hoist truck, 13 dump trucks, a panel truck, a pick-up truck, one large trailer, a chip spreader, and one passenger car.

For the Engineering Department there are two trucks, two passenger cars, and a truck carrying welding equipment.

The Recreation Department operates two trucks and a Fordson tractor for playground maintenance. The Health Department has four passenger cars and a dog van, but no car for the Health Commissioner.

There are seven police cruisers (one used by the Chief), one patrol van, and eight motorcycles.

In the Electrical Department, Superintendent Seabright has a car, and there are three trucks for maintaining street lights, traffic lights, and police and fire signals.

The Water Department has 14 trucks of various sizes and vintages, their models dating from 1926 to 1950. They are used in its three divisions.

The costs were largest in the departments with the greatest load. In a month selected at random by Engineer Dailey, costs ran as follows:

Department	*Gas-oil*	*Maintenance*
Street	$749.70	$733.50
Police	456.08	217.75
Sanitaton	576.50	615.15
Water	221.76	169.00

The costs in the remaining departments were so low as to be inconsequential as a factor in the total costs.

Oppose "Green River" Ordinances Prohibiting Door-to-Door Selling

BETTER Business Bureaus and the American Library Association have both come out recently with statements warning that blanket ordinances against direct sales to homes may harm rather than help communities. Such ordinances, often referred to as Green River Ordinances, take their name from the fact that the first ordinance of this type was passed by Green River, Wyo.

Upheld by the United States Supreme Court in a decision announced in June, an Alexandria, La., ordinance of the Green River type has started a rash of similar ordinances all over the country. Justices Black and Douglas and Chief Justice Vinson dissented from the Supreme Court decision, and appellate courts in eleven states have held similar ordinances invalid.

In a statement entitled "After the Supreme Court Decision—What?" the Chicago Better Business Bureau comments:

> The nation's Better Business Bureaus, the Chicago Better Business Bureau included, have never had any quarrel with direct sellers or direct selling as such. It is a recognized method, of distribution. To condemn it as a whole, as a result of the Supreme Court decision or otherwise, would be as unfair as to castigate all advertising because some is misleading and deceptive. . . .
>
> "It will continue to be the policy of the nation's Better Business Bureaus to condemn only misrepresentation and sharp practice rather than any method or methods of retail distribution."

Ordinances Handicap Education

The American Library Association opposes the Green River type of ordinance on the grounds that it handicaps education. In a statement passed unanimously by the A.L.A. Council at the Association's 75th Annual Conference in Chicago in July, the nation's librarians expressed deep concern "over the effects of such ordinances which deprive communities of educational benefits in the form of books, magazines, encyclopedias, and other materials for reference and study." The statement concludes:

> The American Library Association, believing in the widest possible spread of information and education through books, calls upon librarians in communities where ordinances prohibiting direct selling to homes exist, or are contemplated, to assume responsibility and leadership in bringing to the attention of the public and of legislative bodies the serious handicaps such ordinances place on the communities they intend to help. It urges that ways be found for correcting abuses in direct selling without imposing drastic restrictions which exclude desirable educational materials from homes.

For nearly a year Better Business Bureaus, some 350 Chambers of Commerce, and more than 50 cooperating publishers have been working together to insure high selling standards in the book field. Any questionable sales methods used by a book salesman in door-to-door selling are reported directly to the publisher concerned.

Commenting on the program, Edward L. Greene, president of the National Better Business Bureau, recently wrote:

> Over six months of active operation of this program have demonstrated one factor clearly; there is a very small number of complaints. Naturally some complaints are to be expected, since it is inconceivable that any industry employing thousands of people will be fortunate enough to have each and every one adhere to high business standards. But the monthly records from the cooperating bureaus and chambers do offer proof that a remarkably few persons are reporting dissatisfaction with the sales approach used and products sold by this industry.

WILLIAM V. MILLER
Chairman, Reference Books Division
American Textbook Publishers Institute

Fringe Residents Pay For Annexation

PASADENA officials, taking a cue from the hucksters, have turned a common municipal headache into a profitable market.

During 1950 the California city's treasury was enriched by more than $108,000 by citizens of fringe areas clamoring to become Pasadena residents. And already six more areas with some 14,000 residents have voted for annexation. Affirmative action on their request will net the city an additional $900,000.

According to the International City Managers' Association, this windfall has come about as a result of action by the Pasadena City Council last year in assessing a fee of $100 for each 50 by 150 foot residential lot taken into the city. In addition, a charge of $250 an acre for water and $1.25 a foot for water mains is made for land which is uninhabited. If the owner desires, the obligation can be met over a period of years.

Officials feel that levying the fee dispels an important psychological block to annexation. Generally, fringe residents' reaction is that cities are trying to expand at all costs, but in Pasadena annexation is not permitted until a positive desire is evidenced through payment of the fee. Then, too, economic factors are involved, since charges for water, electricity, and other services are considerably lower than those outside the city limits.

Studies have shown that for the first few years, at least, most annexations cost cities more in services than the new areas pay in taxes, the Association pointed out. Pasadena's joining fee will help counteract this drain.

Willingness of Pasadena's suburbanites to be annexed appears to be part of a nation-wide trend. In 1950, 382 cities completed annexations, the largest number of such actions in two decades.

New Film on Industry and Civil Defense

"TARGET, U.S.A.," a dramatic guide for industry planning and preparation in the event of an atomic attack, has been completed and will begin immediate release by Cornell Films, the organization which sponsored the prize-winning documentary on the same subject, "Pattern For Survival."

The film runs 20 minutes and was written and directed by Herman Boxer, formerly of M.G.M. It is available in full color or black and white. The film utilizes live action, animation, charts, graphs, and other techniques to illustrate practical defense in terms of plants and personnel.

"Target, U.S.A." answers such basic problems as how to protect people and property, how to build up effective plant-wide defense, how and where to build and allocate shelters, how to recruit a defense corps, how to set up first-aid stations, how to safeguard important records, and what management and labor can do right now to set up protective measures against the possibility of an atomic attack.

The Cornell Film Co., which will distribute "Target, U.S.A.," is located at 1501 Broadway, New York, N. Y.

Recreation and Park Workers Organize For Defense Service

TO PROVIDE A POOL of trained and experienced recreation and park workers for defense emergency use, a National Roster of Recreation and Park Personnel is being established by the National Recreation Association. In all, it is expected that the participants will include more than 10,000 of such workers from public departments, hospitals, industry, training institutions, and volunteer agencies.

The Roster will provide the largest available source of qualified personnel for training volunteers for the morale services of the armed forces and industry, emergency teen-age programs, camp communities, and other localities receiving large numbers of new residents, and shelter and evacuation-zone programs.

Registration cards and detailed information may be obtained on request from The National Roster, National Recreation Association, 315 Fourth Ave., New York 10, N. Y.

How San Diego Fights a Drought

City and county devise a double-barreled corrective program to overcome the area's worst water shortage

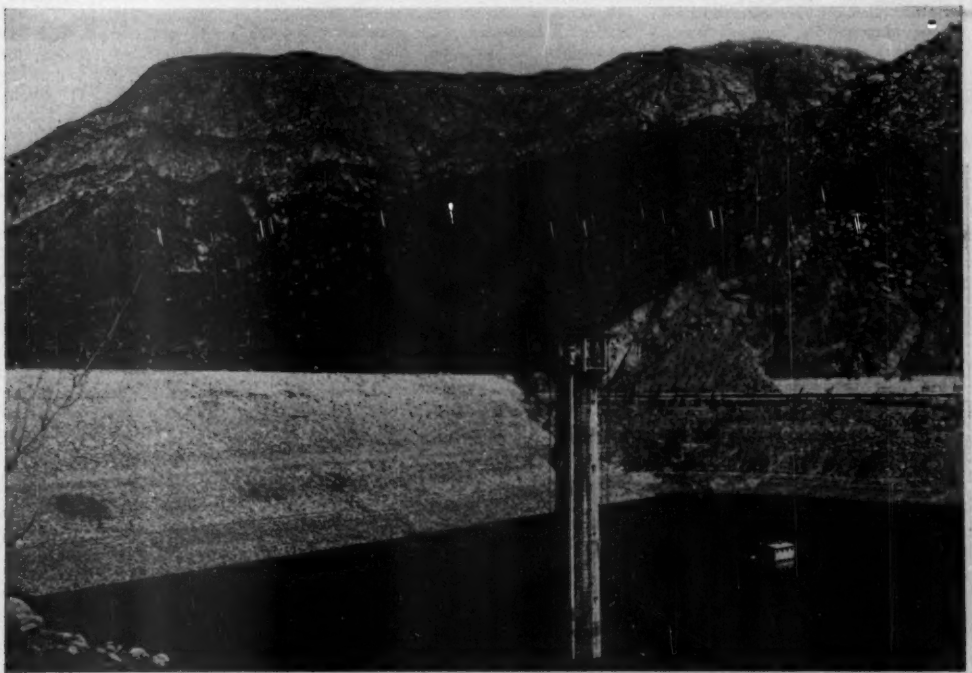
SAN DIEGO, Calif., at present has on its hands the worst water shortage in its history. To meet this emergency, it has a two-fold corrective program under way. The first aims at husbanding the county's present dwindling water supply to overcome the current water "deficit." The second is directed toward increasing the supply so that normal needs can be met.

The records show how severe present conditions are. Last winter's runoff was one of the lowest in history, with delivery of water from the San Diego Aqueduct now equal to water use. Actual water storage throughout the county totaled only 17% of storage capacity. If coming winters are dry, officials believe that under present conditions all reservoirs may be drained dry even though the aqueduct is kept at maximum delivery.

A realization of this prompted the organization of a county-wide Citizens' Water Conservation program. At its head is M. J. Shelton, General Manager and Chief Engineer, La Mesa, Lemon Grove, and Spring Valley Irrigation District, and Director of the San Diego County Water Authority. The program embraces all water agencies and is formed to contact every water user in the county through service clubs, the press, and other agencies. Support of the program by these agencies has been strong.

One of the first steps was the establishment of a "Target Day," with the goal set at reducing the amount of water used per day from 51,000,000 gallons to 34,000,000 gallons. The public did not quite reach its "target," but did lower water use to 38,550,000 gallons. "Fixit Day" has been established for the repair of all leaking plumbing fixtures. Other "Target" days have been planned. The annual goal is to use no more water than was used last year, in spite of the great increase in population, military activity, and industrial use.

To increase the available supply, the San Diego County Water Authority has taken preliminary action toward the construction of the second barrel of the aqueduct. Because of its interstate character, it required Congressional action, and a bill expediting it was introduced in Congress last year. Both the Navy and the Bureau of Reclamation have completed engineering studies regarding the feasibility of the work. The cost of the project is estimated at approximately $15,000,000 and is repayable over a 40-year period by the Authority. At best, officials do not anticipate that the second barrel will be able to deliver water until 1953-54 at the earliest.

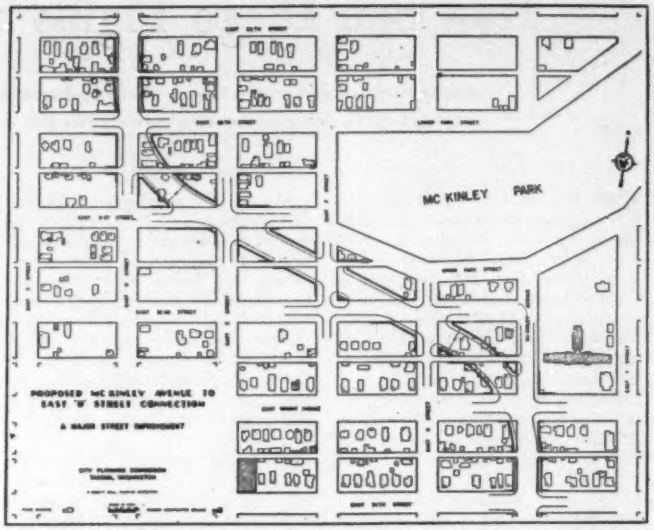


San Diego's El Capitan reservoir is very low. Water storage in the county is at only a fraction of its normal capacity.

TACOMA, WASH.

Progress Toward A Master Plan

By ROY L. GREENE
Planning Engineer
Tacoma City Planning Commission
Tacoma, Wash.



This is one of the important improvements scheduled for construction in Tacoma as a result of the adoption of a Major Street Plan. Widening to 80 feet of McKinley Avenue at the lower right, and East D Street at the upper left, will greatly speed the traffic on the proposed diagonal McKinley Avenue.

PREPARATION of a new modern zoning ordinance, adoption of new subdivision regulations, and a major street plan are some of the recent accomplishments in Tacoma, Wash., which is making steady progress on the preparation of its master plan.

Early in 1946, the Tacoma City Planning Commission secured the services of J. Haslett Bell as planning consultant. With a small staff, the work of assembling data and publishing results obtained from the master-plan studies has been carried on as rapidly as possible.

One of the first large projects undertaken was the preparation of maps showing the use of land, the lot area per family of each parcel, the height of buildings, and the setback of buildings from their front-lot lines. The available insurance atlases covered only about 40% of the total area of the city, so the information required for the remainder of the city had to be obtained by a field survey. The results and conclusions of this study were published in 1949 as a part of the Master Plan under the title, *Land Use and Zoning*, and given wide distribution.

Using the data obtained from this land-use survey, a new modern zoning ordinance has been prepared, and after exhaustive study by the Planning Commission is now ready for public hearings before action by the City Council.

The Civic Center Plan, proposed by the Tacoma City Planning Commission.

Major Street Plan

In July 1950, the Commission published a report entitled *Streets*, which, among other things, recommended a Major Street Plan. This plan was based on our land-use studies and on data secured from the Federal and State Origin and Destination Survey made in cooperation with the City of Tacoma and on other data furnished by the City Engineer and the City Traffic Engineer.

This report was given wide publicity and study by civic organizations, and when no objections were offered, the Planning Commission recommended its adoption to the City Council. On February 7th of this year, the City Council by ordinance adopted the Major Street

Plan. Several important improvements are already scheduled for construction on this system.

To regulate better the future platting of vacant property within the city, a modern set of rules and regulations for the subdivision of land was prepared by the planning consultant at the request of the Planning Commission. After a thorough study of these regulations by various civic organizations and city departments, they were finally approved by the Planning Commission and referred to the City Council for passage of the necessary ordinance. This was finally accomplished in September 1950.

Other Master Plan reports which have been published by the City Planning Commission include: (1) *Site-History-Population*, published May 1948; and (2) *What Tacoma Has to Offer—The Economy of the City and Its Region*, published December 1948.

Proposed Civic Center

Late in 1947, on the recommendation of the Planning Commission, the City Council officially designated as a public and semi-public building district, the area shown in the photograph, titled Tacoma Civic Center. At the November 1948 general election, a bond issue to acquire this entire site and construct a new City Hall thereon received a majority vote of the citizens, but lacked the necessary 60% favorable vote required to approve a bond issue. Tacoma still needs a new City Hall, and at this location.

In order to have the citizens of Tacoma better informed on the work of the City Planning Commission, every opportunity is used to provide articles to newspapers and other publications. About every two months the planning office publishes a *Planning Bulletin* highlighting some phase of planning endeavor. The newspapers have given much space to the contents of these bulletins.

Machine Billing in Niagara Falls

THE tax bills and tax rolls shown here portray the tax accounting and billing system of the City of Niagara Falls, N. Y. The system has been in operation for six years with results satisfactory beyond expectations. Prior to the installation of two Underwood Sundstrand tax-computing machines, we were confronted with a very tedious job of preparing tax rolls and tax bills.

Under the present system the assessment roll serves also as the tax roll. This first half of the work, from name to valuation, is an Addressograph job. The owner's name and address, location and description of property, and the assessed valuation are embossed on the metal plates which print this information on the tax rolls and bills. The roll and bills are printed in separate operations so that the taxpayer's bill and the first copy of the tax roll will be originals.

Duplicates Made

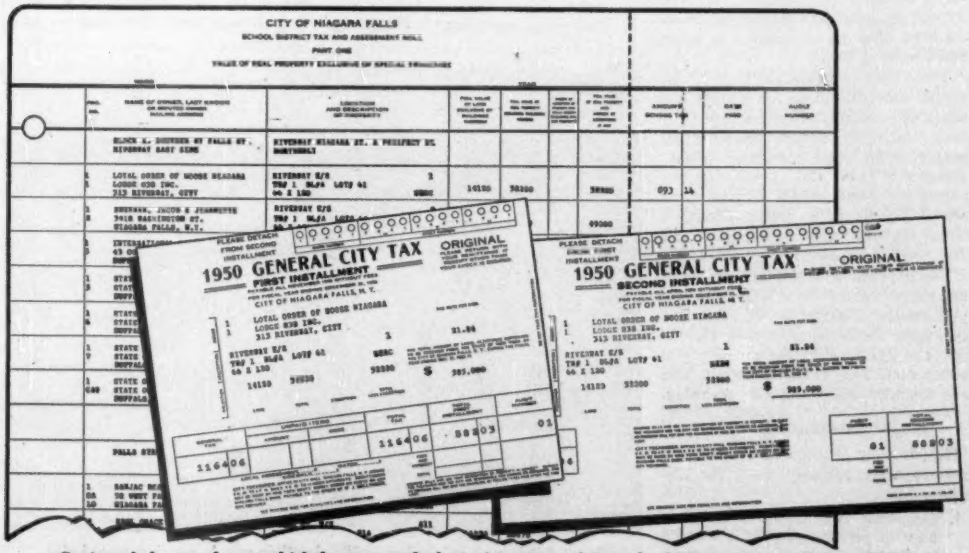
The tax-roll sheets are then inserted in the tax-computing machine, and each bill is inserted at that position which will print the tax extension in the correct columns and line on the right-hand half of the tax roll. As the machine prints the taxes on the bill, the figures are also printed, by carbon spots on the back of the bill, onto the tax roll.

The tax rate is locked on a control plate in the machine. The only operation is to place the valuation on the 10-key keyboard of the machine and hit the motor bar. The machine then automatically computes the tax, divides it into two parts or installments, and prints the taxes simultaneously on the tax bill and tax roll.

Each tax-roll sheet, as completed, is proved for accuracy by applying the tax rate to the total valuations shown at the bottom of the page.

We complete the tax roll in less than 30 days, where formerly the job required 10 or 12 weeks.

E. T. Creach
City Comptroller
Niagara Falls, N. Y.



Copies of the tax forms which have recently been incorporated into the billing work in Niagara Falls.

Texas City Has Learned to Smile Again

By MICHAEL HYRE
Athletic Director and Pool Manager
Texas City, Texas

THE horrible part of it all was the suddenness and completeness. Just before the explosion, I had seen three fire trucks on the docks and many, many people. When I looked back, everything was gone."

"I saw fire shoot upward; huge pieces of debris reached a plane that was flying overhead, then the plane fell into the fire."

Thus witnesses described the most destructive disaster of our time, an explosion which cost the lives of 512 people in Texas City on April 16, 1947.

Catastrophe leaves confusion, heartbreak, and hopelessness. Despite its terrible toll of dead and 4,000 injured, the disaster left an awe-inspiring will to recover and rebuild.

"Bound together by a great and common tragedy for which there is no ready word of solace, but which has bowed every head in humility and compassion, we of Texas City now rise again to carry on the hopes and dreams of those who have gone before," said a post-disaster *Texas City Sun* editorial. "This is our challenge, our privilege and our opportunity."

Less than five years have passed since the explosion. With courage and wisdom, Texas City has been rebuilt. Only a few visible scars remain of a blast that was heard around the world.

The Recovery

How does a city come back from the dead? Mayor Lee Robinson, who was thrown 16 feet off a stepladder when the town blew up, attributes it to spirit and a fighting heart.

Texas City is an industrial city. Although one plant alone lost $50,000,000 worth of property, industries have built back until they employ almost 8,000 people, many more than ever before. Downtown Texas City boasts new department stores, movie houses, and school buildings; a better library, a hotel, its first daily newspaper, and many new businesses.

The population, 15,000 at the time of the explosion, has now soared to approximately 25,000. Within the first year after the blast, more than $3,500,000 was spent on building nearly 600 new homes. They're still going up. You can literally see Texas City growing.

Major Accomplishments

Here is a list of a few of Texas City's more notable advances since the disaster:

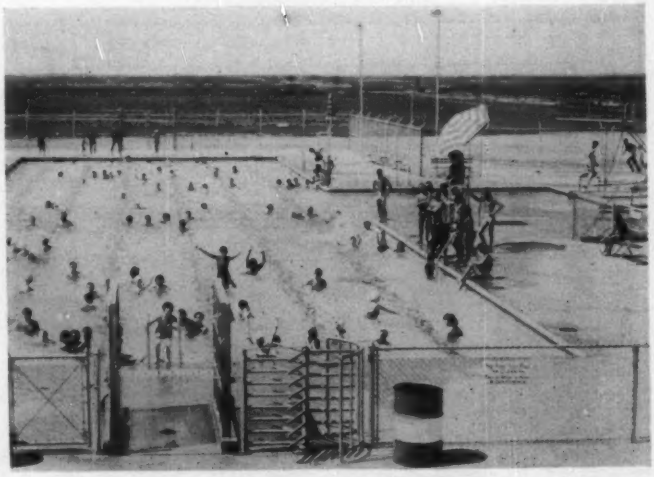
1. Completion of $1,250,000 worth of ultra-wide paved streets. This amounts to about 18½ miles of new paving.
2. Establishment of a recreation department, with an annual budget of $75,000. This department is staffed by professionals in the field.
3. Building of a $200,000 swimming pool, which now has an average daily attendance of over 1,000. A second pool, costing $100,000, will soon be completed.
4. Purchase of a 55-acre park, to include tennis courts, municipal buildings, softball fields, swings, and other recreational facilities.
5. Creation of new school buildings, gymnasiums, and other educational facilities at a cost of approximately $1,500,000.
6. Construction of fire and police stations, a health clinic, and a jail costing a total of $140,000.
7. Adoption of a million-dollar-a-year municipal budget.
8. Formulation of plans for sewage-disposal facilities.
9. Conversion of the old city jail into a modern, colorful recreational administration room, connected to an indoor recreation area, with facilities comparable to any city of Texas City's size.
10. Development of an independent teen-age program, which is the envy of, and model for, many other cities. This program is operated by the teen-agers themselves.
11. Foundation of a new radio station, broadcasting to a wide Gulf Coast area.
12. Addition of approximately $70,000,000 in industrial facilities since the explosion, with more to come.
13. Plans for a traffic-signal system and parking meters, brought about by an increase in the number of automobiles.
14. Building of two brand-new supermarkets.
15. Completion of a new telephone-exchange building costing $1,000,000.
16. Starting of an 80-unit housing project, as well as a great number of smaller projects and individual homes.

Popularity of Pool

As manager of the aforementioned swimming pool, I am particularly proud of its spectacular progress. Netting over $200 per day to the city of Texas City in its early stages of operation, the pool has been amazingly popular with townspeople. Our attendance has averaged well over 1,000 swimmers a day.

On August 18, an official dedication day was held. The Corkettes, crack swimming exhibition team from Houston's swanky Shamrock Hotel; swimming and diving exhibitions by state and national figures; a style show featuring curvy beauties in swimming suits dating from 1870 to the present day; a lavish parade and accompanying hullaballoo, capped by a dedication ceremony featuring top names in state political circles . . . all of these things went into a rousing sendoff for our new pool.

It is a good pool. We think it is one of the best of its size anywhere. A T-shaped pool, it emphasizes utili-



Texas City's new swimming pool. Another one is nearing completion.

ty, with both recreational and competitive swimming in a compact area.

Here's how this is done. The base of the "T" is 25 yards in length. The "cross" of the "T" is 165 feet, or 50 meters in length. Lanes cross in the center. This enables us to hold events demanding either yard or meter measure. The pool is ideal for recreational swimming from the age of 7 up, and it is supplemented by a wading pool. A second pool has almost been completed for Texas City's Negro population.

Citizens Participate

Major part of the credit for suggesting the basic design of this pool goes to a citizen volunteer who has worked hard on the recreational program here from its very inception—Lyman Bryan, employee of a local refinery and a member of the competent three-member park board.

The other two members of the Park Board guiding the municipal recreational movement in Texas City were Dr. L. E. Rosenblad, chairman, now in the Army, and B. R. Brooks, Superintendent of Schools. Dr. Rosenblad has been replaced by John Shirley, another key figure in the recreational movement in this area.

Frank Heiling, personable executive of a railway company, led the way in the adoption of the program by a municipality. He credits Mr. Bryan, Mr. Shirley, L. H. Godard, John B. Richardson, and Fred Shepherd with having been instrumental in helping formulate a plan acceptable to the city fathers. Special commendation should also go to a modern-minded city commission, which has included H. K. Eckert, Carl Rust, W. P. Tarpey, Jr., B. F. Babin, and W. P. Ludwig, Jr.

Richard F. Keller is administrative head of the recreation department, working under the park board, which in turn reports to the city commission. Many hours have been devoted to the recreation program by unpaid volunteers, which is the biggest single factor in the program's tremendous success.

When a city can recover from such a disaster and learn to play, it has a promising future. Texas City faces a dynamic opportunity with confidence. Our city has learned to smile again.

EDITOR'S NOTE: The manufacturers of the swimming-pool equipment included:

Filters: Bowser, Inc., Fort Wayne, Ind.; chlorinators: Wallace & Tiernan Co., Inc., Newark, N. J.; underwater floodlights: Crouse-Hinds Co., Syracuse, N. Y.

The engineers and contractors were:

Consulting engineers: Charles R. Haile & Associates, Houston, Texas; associate engineers: Hilton & Coulson, Houston, Texas; general contractor: Tom Evans, South Houston, Texas; mechanical contractors: A. S. Warren Co., Galveston, Texas; electrical contractors: Pfeffer Electric Co., La Porte, Texas.

Jackson, Miss., Gets New Water and Sewer Lines

By E. T. THOMAS
Assistant City Engineer
Jackson, Miss.

THE DEMAND for sanitary sewers, brought about by the expansion of the city limits, is one of major importance in Jackson's Public Works Department. Complete plans have been prepared for the entire sewer system, and actual construction of both outfall and lateral mains was begun in the fall of 1950, after a general bond-issue election was passed supplying the necessary funds for the outfall system. It is the policy of the city council to assess the cost of all lateral sewers directly to the property being benefited.

The total length of sewers of all sizes required to complete the over-all system is estimated to be approximately 100 miles. The largest of the outfall lines under construction is 48 inches in diameter, and the smallest lateral sewers are 6 inches in diameter.

Concrete Sewer Pipe

Jackson has for many years accepted concrete sewer pipe as a satisfactory sewage-disposal conduit. Concrete pipe is manufactured locally by three concerns, which are equipped to manufacture all sizes of pipe from 6-inch diameter to 72-inch diameter. The joints are 4 feet in length and are required by local specifications to be machine made. The joints in the completed sewer line are sealed with an asphaltic jointing material conforming to the general specifications under which GK jointing material is being manufactured today.

Contractors employed in the construction of sanitary sewers at the present time are using a rather wide variety of equipment, including Barber-Greene, Parsons, and Cleveland trenching machines, drag-lines, and back hoes.

Work Now in Progress

Contracts are now in progress on three of the four outfall lines required, and several contracts are in force on lateral lines. The work now under contract involves the construction of sewers on 102 different street sections, and is estimated to cost approximately $1,700,000, with additional contracts being let as rapidly as possible.

Jackson now has four contracts in force for the construction of water mains and services, which involve the installation of water mains on 48 streets in several sections of the city, at an estimated cost of $310,000. These mains vary in size from 6-inch-diameter pipe to 12-inch-diameter.

The water system, like the sewer system, is totally inadequate, and much work is contemplated in the immediate future toward extending fire protection and domestic requirements to all areas not satisfactorily served at this time.

Contractors currently employed in the construction of water mains are using wheel-type Cleveland trenching machines and Barber-Greene trenching machines.

Specifications require cast iron water pipe, conforming to federal specifications WW-P-421 for Class 150, and bell and spigot pipe. The requirements for making joints permit the use of virgin lead, lead wool, or an approved sulphur jointing compound. Contractors are using Leadite on most of the work now under construction.

Fire hydrants are required to be of the Corey type, as manufactured by the Rensselaer Valve Company, of Troy, N. Y., and the individual service connections are required to be ¾-inch copper tubing.

Detailed Plans Prepared

Contrary to the general practice of installing water mains in past years, a more detailed plan and specification is being currently employed regarding the exact grade and location in the various streets. This has been undertaken because of the fact that many of the streets on which water mains are being constructed will require street paving in the near future, and therefore grades are being established for water mains which will conform to the grade of future street paving. In the days when this procedure was not followed, it obviously developed that many water mains had to be adjusted to the final street grade during the process of paving, a factor which in many instances resulted in considerable damage to the water mains and services.

In the present period of progressive construction, detail plans are being prepared to show all utility locations and street-paving details, a procedure which makes for more efficient coordination in regard to ultimate development of all streets.

Some Questions and Answers On Construction Under CMP

Municipal agencies not exempted

THE National Production Authority on August 3 revised its regulations on construction to bring them into conformity with the over-all operating procedure called the Controlled Materials Plan.

This plan is the device by which the NPA measures the available steel, copper, and aluminum in the country and then adds up what the manufacturers and industrialists need to manufacture their goods and carry on the nation's production. The demand is measured against the supply. Then the materials are allocated where the need is greatest in the defense program and in essential civilian production.

Construction previously had been under government control to the extent that certain building projects were not allowed and other projects were restricted as to cost, size, and amount of steel used. It was decided to put construction under the Controlled Materials Plan beginning with the fourth quarter of this year, on October 1.

Government permission for construction is not required provided the builder is not going to use more than stated minimum amounts of steel and copper. The way the builder goes ahead with a construction project, not requiring NPA permission, is to authorize orders for the controlled materials himself. On the orders, he simply writes: "Certified under CMP Regulation 6," adding the symbol "U-7" if it is a house, "U-6" if it is an industrial plant, or "U-8" for other types of structures, including municipal buildings. He gives these orders to his distributor and obtains his materials in this direct way.

For amusement, recreation, and sports construction, there is a different rule. He cannot self-authorize any amounts of materials for these purposes.

If a builder needs more than the minimum amounts of materials to complete a building after October 1, he must make an application to the NPA or the appropriate government agency.

For hospitals and schools, the "claimant" agency would be the Federal Security Agency; for roads, the Bureau of Public Roads; for commercial buildings (including city halls), the Facilities and Construction Bureau of NPA, Washington, D. C.*

* See listing on page 112 of the August issue of this magazine for other agencies.

By
OFFICE OF PUBLIC INFORMATION
National Production Authority
U. S. Department of Commerce

Questions and Answers

Q. Do the construction regulations apply to agencies of municipal, state, and federal governments?

A. Yes. There are no exceptions to the new orders governing controlled materials for construction.

Q. Can anyone build a structure for recreational, amusement, or entertainment purposes?

A. The building of recreational, amusement, or entertainment structures is limited virtually to the builder who can obtain no more than specified quantities of controlled materials on the open market. No builder will be granted an allotment for such structures if he is not building for the defense effort or cannot prove a hardship.

Q. Is permission to build difficult to obtain?

A. Permission to build is not required for construction of any kind using no more than stated minimum amounts of controlled materials. For construction using larger amounts, authorization is made subject to structural needs and the availability of materials in each quarter of the year.

Q. Are there several types of authorization for building?

A. There are two types of authorization. Where only small quantities of controlled materials are required, a builder may proceed by self-authorization. In all other cases, he is required to obtain an authorized construction schedule and a related allotment of controlled materials.

Q. What are the specified quantities for building a recreational, amusement, or entertainment project?

A. Specified quantities are no more than 2 tons of carbon steel, 200 pounds of copper, and no aluminum, alloy steel, or stainless steel. These quantities cannot be self-authorized.

Q. Can materials be obtained for repairs or maintenance of existing recreational facilities?

A. No authorization may be made for allocation of controlled materials for repairs or maintenance of existing recreational facilities. However, if such materials are available, they may be purchased from steel warehouses and other sources of distribution up to 2 tons or carbon steel and 200 pounds of copper and copper-base alloys for this purpose.

Q. Can anyone build a commercial structure, such as a store, a warehouse, or an office building?

A. Anyone may proceed by self-authorization to build a store, a warehouse, or an office building, provided he uses no more than 2 tons of steel, nor more than 200 pounds of copper, and no alloy steel, stainless steel or aluminum, except Class B (aluminum) products, such as screens, doors, etc.

Q. Once authorized construction schedules and allotments are obtained, is it possible to purchase materials without use of the allotment and "DO" rating?

A. No. Such purchases are prohibited.

Q. What is meant by a "DO" rating?

A. "DO" stands for Defense Order. The term is used to designate a purchase order or contract which has been granted priority by the authorized government agencies.

Q. If building was started before the new regulations went into effect, must authorization for the necessary additional materials be obtained?

A. Authorization is necessary only where the builder, for completion of his project, requires delivery after October 1 of more materials than he can self-authorize.

Q. Under the new orders, what are the restrictions for building an apartment house?

A. Anyone wanting to build an apartment house must file an application and receive an authorized construction schedule and a related allotment before he can start.

Q. Is there a special form used in making application for construction projects when more than specified amounts of controlled materials are used?

A. Yes. Form CMP-4C is used for most building projects. In the construction of a building classed as recreational, entertainment, or amusement on certain specified grounds, Form NPAF-24A is used also.

Q. Is another application form necessary when a builder seeks an adjustment or exception from the prohibitions on the use of copper or aluminum?

A. Form NPAF-24A is the special form for any builder seeking such adjustment or exception.

Q. Where can application forms for building projects be obtained?

A. Application forms may be obtained at any Regional or District Office of the Department of Commerce. Further information about new controls may be obtained by visiting or by writing the nearest such office.

Public Relations Pays Off

in Baltimore bond-issue approval

By ARTHUR D. McVOY
Director, Department of Planning
Baltimore, Md.

A section of the model used to educate the public on the Jones Falls Expressway.

APPROVAL of $45,500,000 in bond issues by Baltimore voters in a recent municipal election was not achieved without careful preparation. All ten of the bond measures received heavy majorities. They were vigorously supported by the administration of Mayor Thomas D'Alesandro, who recently was returned to office for another term.

Among the bond issues approved were the following: $5,000,000 self-liquidating loan for off-street parking; $3,000,000 to finance new incinerator construction; $500,000 for installation of traffic signals; $12,000,000 to finance school-building construction; $12,000,000 to be used for three self-supporting port-improvement projects; $4,000,000 for courthouse renovation, and construction of a new infirmary and a health district building, and a $10,000,000 throughway loan.

The throughway loan will be used for the first, or south, section of the Jones Falls Expressway.

This expressway, which will extend north from the center of Baltimore City and connect with the Harrisburg, (Pa.) freeway, now under construction by the Maryland State Roads Commission, is the first major project in carrying out Baltimore's Master Transportaion Plan.*

The loan for the starting of this project is the "pump-priming" for a $220,000,000 program of major-highway construction. Once the program is under way, sufficient money will be available each year from the gasoline-tax fund to carry on construction and complete in approximately 22 years the entire system of major highways and expressways in the Master Plan.

Reaching the Public

Two and one half years of groundwork by the Planning Commission of Baltimore and its staff, in a long-range effort to explain the Master Transportation Plan to the people, was largely responsible for the approval of this particular loan. Meetings and discussions were held with citizen and business groups; radio and television programs were conducted; talks were given at various civic organization and service-club meetings; and the following series of "Progress Through Planning" reports were published and widely distributed:

Report No. 1—"The Basis For a Master Transportation Plan," 1949, states problems and principles.

Report No. 2—"A Tentative Master Transportation Plan," 1949, explains the actual over-all major highway system and the reasoning behind it. A supplement to Report No. 2 gives very detailed information on basic data analysis, and methods used by the Department of Planning staff in arriving at the facts and conclusions in Report No. 2.

"Traffic And You," 1950, a cleverly illustrated report, is being used as an aid to instruction in the Baltimore schools. The Department of Planning staff collaborated with the Community Study Workshop of the Department of Education in editing the text.

Report No. 3—"The Master Transportation Plan Financial Program," 1950, describes a very carefully worked out and detailed long-range plan of highway financing for the entire system. This report had a pronounced effect on the public's attitude toward the whole plan.

"The Jones Falls Expressway," 1951, a colorful broadside pamphlet shows some of the details and the pertinent facts relating to the Expressway. Sixteen thousand copies of this pamphlet were distributed in Baltimore during the ten days before the municipal election.

In addition, a large scale model showing the lower portion of the expressway, in true relationship to actual conditions, was constructed. This model was presented to the public at a reception held by Mayor D'Alesandro in his office. It was moved later to the main Public Library and put on display. The newspapers gave excellent coverage on these events. Approximately 30,000 people viewed the model at the Public Library alone. It was also used in explaining the expressway on several television programs.

Results Highly Successful

These activities and projects had the following effect:

The newspapers have given continued support to the Planning Commission and strongly recommended public approval of the loan.

The Commission on Governmental Efficiency & Economy, an independent watchdog group of top-notch financiers, recognized the long-range plan of financing the $220,000,000 highway system as being sound and vigorously supported the loan.

The citizens of Baltimore accepted in general the Master Transportation Plan* and approved by an overwhelming vote of 83,000 to 18,000 the Jones Falls Expressway Loan.

This method of introducing to the public the Master Transportation Plan and the Jones Falls Expressway is only the beginning of a continuous and comprehensive program on the part of the Planning Commission and its staff in bringing all phases of planning to the people of Baltimore.

*See page 151, THE AMERICAN CITY, February, 1950.

The Municipal Bond Market

Representative Municipal Bond Sales
July 31 to August 8, 1951

Date of Sale		*Amount*	*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
7-31	Baltimore, Md.	$29,492,000	Var. Imp.	12-1/6	1.679
7-31	Indianapolis School City, Ind.	3,000,000	School Bldg.	13-1/6	1.61
8- 1	Miami, Fla.	1,000,000	Street Imp.	6-1/2	2.2683
8- 1	Roanoke, Va.	2,100,000	School	15-1/2	1.8292
8- 2	Bridgeport, Conn.	800,000	Var. Imp.	7-5/6	1.427
8- 2	University of Cincinnati, Ohio	1,300,000	Dormitory Rev.	20-1/6	2.664
8- 3	Lamar, Colo.	800,000	Electric Rev.	9-1/2	2.3934
8- 6	Atlanta, Ga.	1,000,000	Water Rev.	12-1/2	1.906
8- 6	Sioux City Ind. School Dist., Ia.	600,000	School Bldg.	8-1/2	1.4288
8- 6	Warren, Ohio	5,450,000	Water Rev.	24-1/3	2.5827
8- 7	Burlingame Elem. School Dist., Calif.	1,090,000	School	10-1/2	1.6831
8- 7	Nashville, Tenn.	700,000	Var. Imp.	15-1/6	1.7402
8- 7	St. Louis School Dist., Mo.	6,650,000	School Imp.	11-2/3	1.5516
8- 8	Arlington County, Va.	2,375,000	School	13	2.0739

$171,319,000 Local Housing Authority Bonds Successfully Marketed

By CATHERINE CLARK
Municipal Service Department
Dun and Bradstreet, Inc.
New York, N. Y.

THE successful marketing of $171,319,000 local-housing-authority bonds in July was the most important development in the municipal bond market in many months. These bonds were the long-awaited first installment of six or seven billions which may be issued over the next half-dozen years to finance a maximum of 810,000 dwelling units under the provisions of the Housing Act of 1949. The character and security of these bonds, and their reception by investors, are, therefore, a matter of considerable interest.

Housing bonds are, of course, not new. Since passage of the Housing Act of 1937, some 560 local housing authorities or commissions in forty-odd states, plus Alaska, Hawaii, Puerto Rico, and the Virgin Islands, have been organized and have issued bonds, so that investment bankers and the investing public have become familiar with this type of obligation. What is new is the magnitude of the housing program, and of the required financing, authorized by the 1949 Act. At the time of the July offering there were some $429,000,000 of housing bonds outstanding, of which $300,000,000 were held by the Public Housing Administration and $129,000,000 by the public. Compare these figures with the financing expected under the 1949 Act, and it becomes clear that the planning and execution of such a program is no small task.

Most New Financing Public

Furthermore, most of the new financing will be public. The Housing Act of 1949, like the 1937 Act, permits the Public Housing Administration, the federal agency overseeing the housing program, to lend up to 90% of the development cost of a project. However, the PHA's authorization to make loans is limited to a total of $1,500,000,000, so that of necessity at least three-quarters of the proposed financing must be done through public offering of bonds; probably the proportion will be considerably higher. Another comparison may help to suggest the size of this financing. In 1950 the total amount of long-term borrowing by states and municipalities, including housing authorities, was $3,700,000,000; in 1949, and also in 1948, the total was just under three billions. Housing Authority bonds included in these totals were $66,000,000 in 1948, $143,000,000 in 1949, and $59,000,000 in 1950.

While the job of marketing an additional $1,000,000,000 bonds a year cannot be minimized, the security of the housing bonds is such as to make them particularly attractive to investors. Technically, they are obligations of the issuing local agency, payable out of the rents and revenues of the housing project after the payment of operating and maintenance expenses (local housing authorities have no taxing power, and, when issued by a city, the housing bonds are special obligations which do not pledge the faith and credit of the city). Practically, the housing bonds are obligations of the United States; furthermore, they are obligations exempt from the federal income tax. The mechanism through which they become so is the Annual Contributions Contract between the PHA and the local agency.

Differences Between 1937 and 1949 Acts

The Housing Act of 1937 provided that the United States (through its appropriate agency, which is now the Public Housing Administration) may make contracts with local housing agencies to pay annual contributions equal to the average annual debt service on housing bonds issued by these agencies to finance development of a project. (Principal maturities of the bonds are scheduled in such amounts that debt service is approximately the same each year.) The Act provided that "The faith of the United States is solemnly pledged to the payment of all annual contributions contracted for pursuant to this section, and there is hereby authorized to be appropriated in each fiscal year, out of any money in the Treasury not otherwise appropriated, the amount necessary to provide such payments." The Act also exempted bonds issued by local housing agencies from federal income taxes now or hereafter to be imposed.

However, the 1937 Act required the PHA, in the event of certain defined "substantial defaults" by the local agency, either to cancel the Annual Contributions Contract or to reduce or withhold payment of the annual contributions. Bonds issued under these provisions could not, therefore, be considered to be backed unconditionally by the faith of the United States, and their market value was somewhat impaired. This situation was corrected in the 1949 Act, which provides that the obligation of the PHA to pay the contributions is unconditional so long as any of the obligations remain outstanding; however, upon the occurrence of a substantial default as defined in the contract, the local housing agency is required to deliver possession or title of the project to the PHA. Most of the contracts made under the 1937 Act have since been amended in accordance with the provisions of the 1949 Act.

Debt Service Money

The annual contribution which the PHA contracts to make available is equal to the average annual debt service on the bonds. The actual amount which will be paid each year is the difference between that figure and the amount already on deposit in the debt-service fund; in effect, the difference between annual debt service and the net revenues of the housing project, although the language of the contract insures that sufficient money will be available for debt service whether or not the local agency has deposited the net revenues. The contribution is paid directly to the fiscal agent, the bank or trust company where bonds and coupons are payable, rather than to the local housing authority.

The Housing Act of 1937 provided that the PHA might contract to pay aggregate annual contributions of $28,000,000. The 1949 Act increased this sum to $336,000,000 per year ($223,000,000, currently, with an additional $55,000,000 becoming available on July 1, 1952, and another $58,000,000 on July 1, 1953).

The first offering of bonds under the 1949 Act was made on July 17, 1951. It included obligations of 58 local housing authorities, ranging in size from $161,000 of the Canyon, Texas, authority to $17,340,000 of the New Orleans authority, and aggregat-

(Continued on page 181)

City Outlook and Reporter

Local Government Has Important Role in New Federal Dispersal Policy

AFTER years of discussion, the first concrete steps were taken in August by the federal government to implement a "National Industrial Dispersal Policy." As President Truman approved the plan developed by the National Security Resources Board, and based on a "pilot operation" conducted in Seattle, Wash., by representatives of industry, labor, and local government, he ordered all federal departments and agencies to adhere to the program.

The program has four key features:

1. It is designed to disperse new industry and expanding industry—not to move established industry.

2. No region of the country is to be built up at the expense of another.

3. Industrial dispersion can be carried out if such deployment is confined to each local marketing area.

4. State and local governments, in cooperation with private enterprise, are called upon to take the initiative in this defense objective. The Federal Government will provide encouragement and technical assistance.

The following measures are among those which will be taken at the federal level to carry out a coordinated policy:

1. To the greatest extent practicable, certificates of necessity, allocations of critical materials for construction purposes, and emergency loans growing out of defense production will be confined to facilities which meet satisfactory standards of dispersal.

2. Primary consideration to dispersal factors will be given in locating facilities built by the Federal Government.

3. Defense contracts will be awarded, and planning under the Department of Defense production allocation program will be conducted in such a manner as to make maximum use of facilities located in dispersed areas.

The booklet outlining the program, published by the N.S.R.B.,* points out that new industry is being established, and established industry is being expanded at the rate of an estimated investment of $23,000,000,000 this year, and that this productive capacity must be protected through the principle of using *space* for defense against attack.

However, the booklet declares that industrial dispersion is more than a defense measure, and is an investment in the future welfare and progress of the nation. In terms of long-term economic and social benefits, it will offer better working and living conditions for industrial workers, greater production efficiency through reduction of urban congestion, and a healthier, more stable national economy, an essential to continued growth of private enterprise.

The booklet points out the potential role of local committees in taking the initiative for deployment of industry in their own areas. It tells what kind of area is suitable for small groups of plants, and points out, step-by-step, how local committees can get a dispersion program on its way. A check list focuses attention on the importance of local zoning, subdivision, and planning regulations as a prerequisite to sound site development.

The program has been vigorously endorsed by Charles E. Wilson, head of the Office of Defense Mobilization, and the principle of plant dispersal has been urged by such diverse groups as the U. S. Chamber of Commerce and labor organizations.

* "Is Your Plant a Target?" Available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 1951. 16 pp. 25 cents.

Municipal Incorporation Urged For Two "Atom Towns"

A SPECIAL panel of consultants established by the Atomic Energy Commission has urged that the two government-owned towns of Oak Ridge, Tenn., and Richland, Wash., be transformed into self-governing communities with privately owned real estate.

The recommendations of the panel are currently being studied by residents and community groups in the two "company towns" now financed largely by federal funds. The Atomic Energy Commission has also taken action to secure appraisals of individual properties and to poll residents in order that final arrangements will be completely satisfactory regarding the incorporation measures proposed by the panel. The Commission and its principal contractors serve as local governing officials, employers, and landlords of the two towns at present. However, the panel's report declared that self-government and private property ownership would aid the commission in the recruitment and retention of workers.

Panel members are Richard G. Scurry, Attorney of Dallas, Texas, Chairman; George E. Bean, City Manager, Grand Rapids, Mich.; Frederick M. Babcock, construction finance consultant, Washington, D. C., and George Gove, vice-president in charge of real estate, Metropolitan Life Insurance Company.

The Panel is expected to report later on the third AEC-owned community at Los Alamos, N. M.

HHFA To Study Urban Growth In Two Defense-Plant Areas

RESEARCH is under way to help solve housing and other community development problems resulting from the rapid influx of population to new defense production centers, the Housing and Home Finance Agency has announced.

Under one of the projects, the University of North Carolina will study urban growth around the new plant of the Atomic Energy Commission on the Savannah River in South Carolina. Meanwhile, the University of Pennsylvania will conduct a similar study for HHFA on urban development around the United States Steel Company's works now being built at Morrisville, Pa. The findings will be utilized first in the areas studied as an aid to assuring adequate living conditions. Both research projects will run for two years.

Typical of the early changes in these areas is the arrival of many house trailers. Providing services for the trailer families through the ordinary workings of town and county governments is an immediate problem requiring analysis.

Private enterprise is handling the primary job of housing at both new plant locations, and one of the major goals of the research projects will be to observe how private firms and the various governmental jurisdictions concerned pool their resources to assure needed facilities for workers and their families.

Cities Boost Civil Defense Appropriations

CITIES are backing their civil-defense plans with dollars despite lack of action on the part of the Federal Government.

Data reported to the American Municipal Association reflects local officials' increasing awareness of their responsibility for urban residents' safety. More than $4,300,000 was appropriated for civil defense by 78 cities, ranging in size from 15,000 to 8,000,000 population, which reported their budgets to the Association recently. This figure is for fiscal 1951 and contrasts with but $275,000 spent for this purpose in fiscal 1950 in the same cities.

Cities' concern with civil defense is more vividly pointed up, however, in fiscal 1952 appropriations. With less than half of the 87 reporting cities having finally approved next year's budget, civil-defense appropriations have soared to more than $12,000,000.

New York leads all other cities in civil-defense appropriations for 1952, the Association data shows. More than $9,000,000 is budgeted for this purpose by the city as compared to the nearly $2,000,000 spent last year. Detroit has allocated $1,500,000 for civil-defense expenditures —two-thirds for purchase of equipment—during the 1952 fiscal year.

Richmond, Va., has budgeted some $66,000 of its $86,000 civil-defense appropriation as matching funds for capital outlays. Similarly, for this purpose, Kansas City and Wyandotte County, Kans., have appropriated $62,000, and St. Louis has set aside $50,000 of its total appropriation of $82,000.

Defense Housing and Public Housing Both Score Congressional Victories

LOCAL officials in many cities heaved a sigh of relief on August 16 when the House of Representatives by voice vote passed the Defense Housing Bill (S.349) which contains federal aids for community development and housing in critical areas wrestling with mobilization-impact problems. The Senate had passed earlier a somewhat similar measure.

On August 15, the House passed the Independent Offices appropriations bill and decisively defeated, 206-169, a motion to limit to 5,000 units the number of public-housing units which could be started in 1952. This would virtually have crippled the entire public-housing program. The limitation had previously been raised to 50,000 by the Senate, with no ceiling on the number that may be constructed in future years. This was the action that the House decided to follow. The Senate subsequently approved the conference report on the Independent Offices appropriations bill, sending the measure to the White House.

The stake municipal governments have in the public-housing program is indicated by the fact that, as of August 1, the Public Housing Administration had received requests from 1,011 communities for assistance in the creation of low-rent housing projects.

The long-deadlocked Defense Housing Bill also has numerous provisions favorable to local governments. It includes authorization of $60,000,000 for construction of community facilities and services and $50,000,000 for housing construction in defense areas. It also provides an item of $10,000,000 for the government to buy sites which would be planned and developed for resale to private builders in defense-housing areas.

The bill will run for two years, ending June 30, 1953. It will also relax housing credit regulations, and gives the Federal Housing Administration a $1,500,000,000 increase in its authority to insure mortgages. Another potentiality significant authorization is $15,000,000 to be allotted for federal loans to manufacturers of prefabricated housing.

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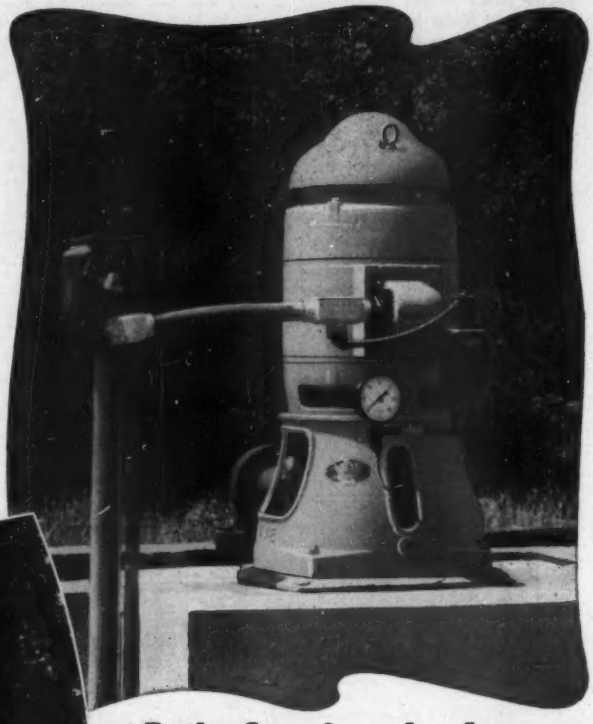
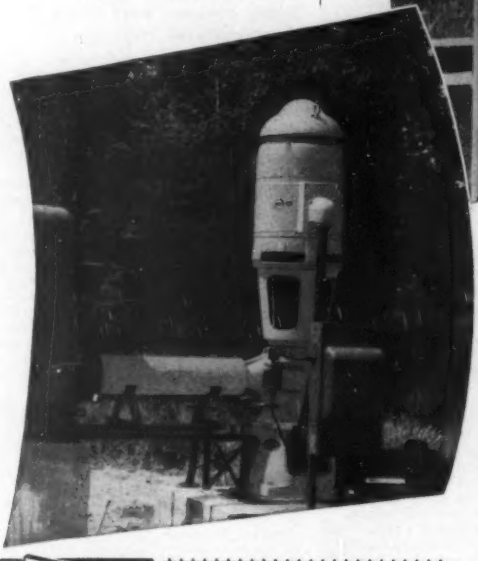
. . . WITH her population more than doubling during the summer season, the resort city of Toms River, New Jersey, was facing a serious water shortage problem. Five old, inefficient and not too dependable wells were being operated with suction pumps. Layne was called in for a discussion of what could be done with limited funds. Layne's recommendations resulted in a contract for the rebuilding and re-equipping of one old well and the drilling and equipping of a new one. The contract also called for equipping one pump with an auxiliary, gasoline engine drive, on one of the pumps, for use in case of electric power failure. Without delay everything was finished according to the contract, giving the city of Toms River a water supply that more than fulfills present needs. The new equipment also greatly reduced operation cost which more than justified the investment.





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Everything, with the exception of some wiring for the Toms River job was handled complete by Layne in one inclusive contract. Each phase of the work was under the supervision and direction of Layne engineers who made sure that all materials and method of installation were up to Layne's very exacting standards. The entire job handled in one contract was an important factor in saving time, extra expense and unnecessary worry for the Toms River city officials. Furthermore it assured the city of obtaining a completely satisfactory job throughout.

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Restrictions on Non-Residential Uses in Non-Residential Districts

In *Zeltner* v. *Watson*, 81 Atlantic (2d) 199 (New Jersey Superior Court, 1951), the Atlantic City Zoning Ordinance in effect in an area along the Boardwalk forbade *inter alia* "lunch cars or wagons, pullman diners.' In holding this clause inapplicable to a proposed structure, the Court drew a distinction between (a) a soda fountain and luncheonette providing light lunches and "short orders," and (b) a lunch wagon, which is usually located in what was originally a movable vehicle. The Court also held that a similar prohibition on any "open stand for the sale of food" had been omitted in a redraft of the ordinance. While touching on the point, this opinion (which is not too clear) does not shed much light on the question of to what extent it is possible to forbid cheap enterprises in business areas.

In *Gionfriddo* v. *Town of Windsor*, 81 Atlantic (2d) 266 (Connecticut, 1951), the local zoning ordinance authorized the Board of Zoning Appeals to issue a permit for a garage, a filling station, or automobile repair shop in a business zone, but not for a junk yard or "for the sale or display of new or used motor vehicles in any open lot or portion thereof." The Court held that the restriction quoted was invalid.

> The ordinance in question prohibited the display for sale of even one new car on the lot. It is not apparent how such an act could effect property values or the health, safety, morals or even the esthetic sensibilities of the people of Windsor. If the last statement is questioned, the answer is that in Connecticut esthetic conditions alone are insufficient to support the invocation of the police power.

See also *Town of Vestal* v. *Bennett*, 104 New York Supplement (2d) 830 (Supreme Court, 1950). A local ordinance (not part of a zoning ordinance) required all junk dealers in the town to operate either in enclosed buildings, or in an open area surrounded by a solid board fence at least 6 feet high. The Court repeated the familiar holding that esthetic reasons alone are insufficient for regulation under the police power.

> It is difficult to imagine what danger to public health, morals, or safety exists in connection with the operation of a junk yard on an unenclosed lot that could be removed or prevented by the erection of a solid board fence six feet high. Certainly there is nothing immoral about a junk yard. Neither does is constitute any menace to public health, or if, by reason of unsanitary conditions being permitted, it should become such a menace, putting a board feace around it would not be a reasonable solution of the problem.

However, it was emphasized that this ordinanee would apply anywhere in the town, possibly even on isolated plots away from public view.

Drive-In Theatre Cases

In *People* ex rel *Trust Company of Chicago* v. *Village of Skokie*, 97 North Eastern (2d) 310 (Illinois, 1951), it was proposed to locate a drive-in theater on a vacant tract of land which was formerly used for a clay pit and then for a garbage dump, and which was located in an industrial area and zoned for heavy industry. Thereupon the Village hastily amended the zoning ordinance to exclude drive-in theaters completely from the village. In a test case, the ordinance was defended on the ground that it was necessary to protect industrial districts by excluding such other uses, and that the traffic generated by the theater would have an adverse effect on near-*by* industries, primarily by congesting the highways. The Illinois Court invalidated the ordinance on the ground that the effect of the proposed theater on the *value* of the existing manufacturing uses would be slight.

New residences have been excluded from industrial districts in many cities, and to date there has not been much case law on such regulations. Regulations excluding other uses are rare, and — whatever the merits may be — the result in this case is not surprising, especially in Illinois.

In *Abbott* v. *Zoning Board of Review of City of Warwick*, 79 Atlantic (2d) 620 (Rhode Island, 1951), the Court invalidated an exception granted by the local Board of Appeals for a drive-in theater in a residential district. The opinion contains a statement on the unique type of problem involved in the location of drive-in theaters.

Other recent cases involving drive-in theaters include *Hertsch* v. *Zoning Board of Appeals of Town of Bloomfield*, 79 Atlantic (2d) 767 (Connecticut, 1951), and *King* v. *James*, 97 North Eastern (2d) 235 (Ohio Court of Appeals, 1950).

Non-Conforming Uses

In *Franmor Realty Corp.* v. *LeBoeuf*, 104 N. Y. Supplement (2d) 247 (Supreme Court, 1951), a non-conforming filling station in Old Westbury was closed in 1942, as a result of restrictions on the sale of gasoline, and the oil company removed its pumps and tanks. In 1950 a permit was sought to re-establish the filling station. The plot was in a single-family zone with a minimum lot requirement of one acre, opposite a business zone in the adjacent Village of East Hills. While there was no voluntary act of abandonment here, the Court construed the ordinance to require that mere cessation of business for one year prevented re-establishment of a non-conforming use, and held that the period of one year was a reasonable requirement.

> In this connection it must be borne in mind that the policy of the law is the gradual elimination of non-conforming uses and, accordingly, ordinances should not be given an interpretation which would permit an indefinite continuation of the non-conforming use.

The Court then quoted the *Tallahassee* case.* (in which the federal courts upheld the elimination of a non-conforming filling station with evident approval), and indicated some doubt as to the validity of the famous *Dema* ** cases in Louisiana.

> . . . this court does not feel that the period of one year is a reasonable period in the ordinary case within which to require the amortization of a going business, but it shows the extent to which courts have gone in connection with ordinances designed to eliminate non-conforming uses.

* See 183 Federal (2d) 410, certiorari denied, 340 U. S. 892.

** See 168 Louisiana 172, certiorari denied, 280 U. S. 556, and 168 Louisiana 752.

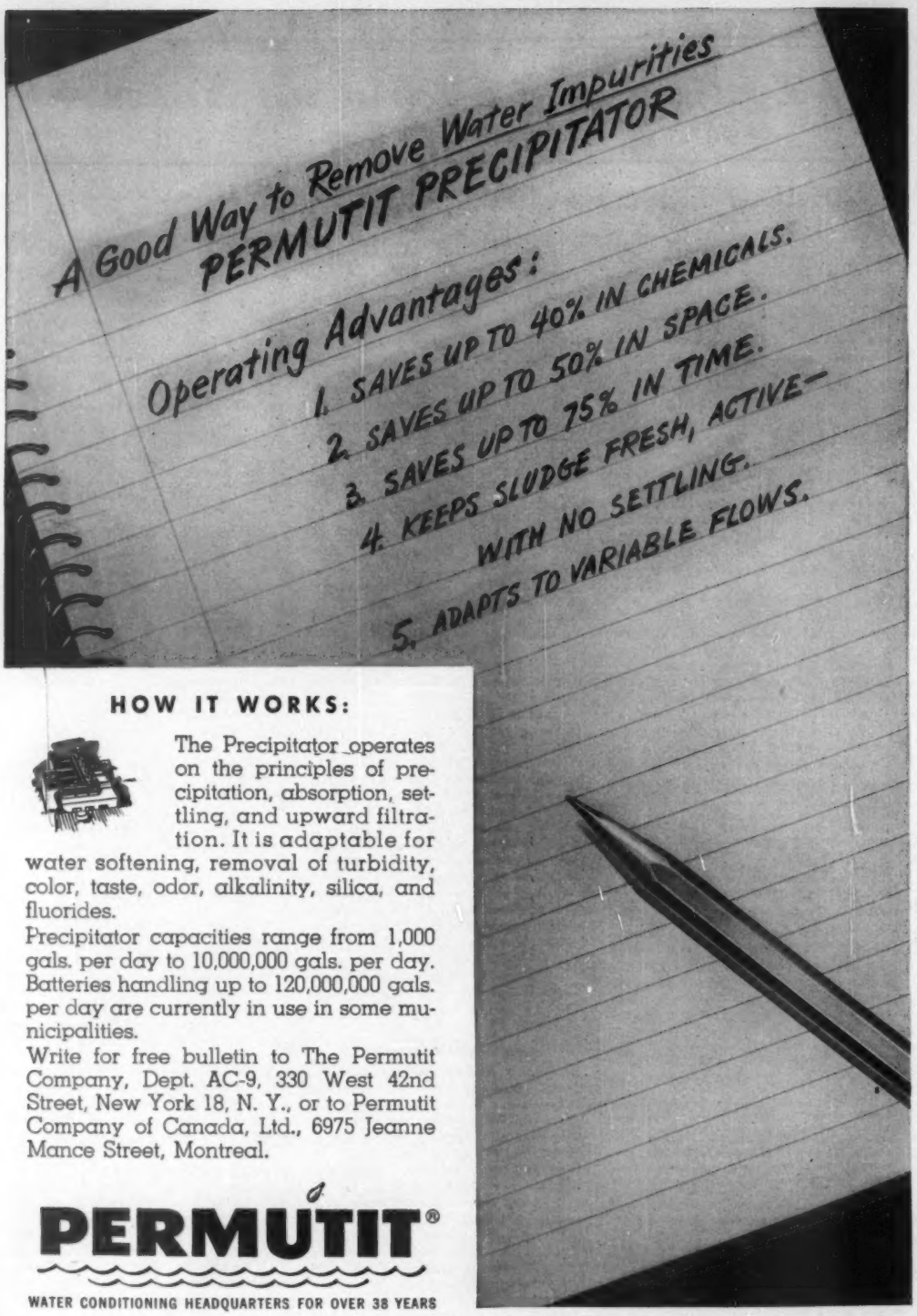
Automotive Service

In *Epstein* v. *Weisser*, 102 N. Y. Supplement (2d) 678 (Appellate Division, Second Department, 1951), the Court upheld an ordinance requiring the consent of adjacent owners for the establishment of a filling station, on the ground that the latter was a potentially dangerous and offensive use. This decision reaffirms the distinction made in *Concordia Collegiate Institute* v. *Miller*, 301 N. Y. 189, and in doing so in effect reiterates a rule of law that community facilities are not to be regarded as undesirable in a residential neighborhood.

Industrial Zoning

In *White* v. *Hartnett*, 104 N. Y. Supplement (2d) 669 (Appellate Division, 1951), the Court held that the regulations of the industrial districts in the Town of Perinton permitted the establishment of a "labor camp." While the ordinance was rather carelessly drawn, apparently it contained no prohibition of residence in such districts.

In *City of Detroit* v. *S. Lowenstein & Son*, 47 North Western (2d) 646 (Michigan, 1951), the Court dismissed the city's action to enjoin the erection of a slaughterhouse. The Detroit zoning ordinance provides that, as a prerequisite to the erection of a slaughterhouse, the City Planning Commission is required to make a finding that the proposed establishment will not be injurious to the surrounding neighborhood and not contrary to the spirit of the zoning ordinance; and the Court held that the Commission's records contained sufficient indication that such a finding was made in this case, even though the matter was not spelled out in detail.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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Annexation — Adoption at Special Meeting—Slight Error in Metes and Bounds—Ordinance Valid

In action against city to set aside annexation ordinance on ground that all members of city council were not given notice of special meeting at which ordinance was adopted, held that notice not necessary where all members present, since could be waived, and fact that 1,230 acres of land described by metes and bounds included three acres previously annexed did not render ordinance invalid. *William* v. *City of Evansville*, 90 N. E. (2d) 219 (Ind. App., April 12, 1951).

Annexation—Two Cities Attempt To Annex Same Land

Where Cities of Milwaukee and West Allis sought to annex same territory by ordinance, held that City of West Allis having instituted first proceeding, it took precedence over City of Milwaukee proceeding, and West Allis ordinance was valid. *Town of Greenfield* v. *City of Milwaukee*, 47 N. W. (2d) 292 (Wis., April 3, 1951).

Arrest — State-House Grounds — Conviction for Violation of City Ordinance Upheld—Gambling

Where defendant was arrested on state-house grounds for violation of ordinance prohibiting possession of memorandum of wagers on horse racing, held, in affirming conviction, that in absence of statute city was not deprived of its authority to exercise police regulations over state-house grounds which lie within its territorial limits. *City of Columbus* v. *Gantner*, 98 N. E. (2d) 75 (Ohio App., Sept. 20, 1950).

City Employees—Payment by Check —City Must Provide Cash on Premises Sufficient to Cash

Where order of Commissioner of Labor and Industries required city, which paid city employees by check at hospital one mile from center of city, to provide sufficient cash on hospital premises to cash said checks, held that order was within scope of powers conferred upon commissioner by statute and city treasurer was bound to comply with such order. *Treasurer of City of Worcester* v. *Department of Labor and Industries*, 98 N. E. (2d) 270 (Mass., Mar. 29, 1950).

Dedication—Streets—Conveyance By Owner Before City Accepts Revokes Dedication

In action to enjoin city from entering upon land to grade streets so as to give public easy access to lake shore for swimming purposes, held that offer by original owner of land to dedicate streets to public had been withdrawn or revoked when original owner conveyed land to plantiff before acceptance of dedication by city. *Smith* v. *City of Hollister*, 238 S. W. (2d) 457 (Mo. App., Mar. 30, 1951).

Electricity—Power-Line Easement— City Must Bear Cost of Raising the Wires Over Grantor's Land

Where owner granted to city easement for electric wires over property and city ran wires at height of 51½ feet and it was necessary in carrying on grantor's business that wires be more than 61 feet, held that city must bear cost of raising wires to required height. *Youngstown Steel Prod. Co.* v. *City of Los Angeles*, 229 Pac. (2d) (Cal. App., April 10, 1951).

Handbills—Ordinance Prohibiting Held Not to Apply to Distribution Of Political Literature

Where defendant was charged with violating Village of Amityville ordinance prohibiting distribution of handbills, cards, etc., on street, sidewalks, and public places, held that distribution of political literature in manner which did not result in littering streets or sidewalks, blocking traffic, or other violation of law did not violate ordinance and information would be dismissed. *People* v. *Hess*, 103 N. Y. S. (2d) 582 (N. Y. Pol. Just. Ct., Oct. 3, 1950).

Highways—Right of Turnpike Authority to Construct Through City

In action by city to enjoin turnpike authority from constructing one of two interchanges and use of dirt fill in building segment of roadway between the two interchanges, held that turnpike authority was entitled to summary judgment since there was no showing of abuse of its authority. *City of Newark* v. *New Jersey Turnpike Authority*, 79 Atl. (2d) 897 (N. J. Super. Ct., Jan. 19, 1951).

Noise—Recorded Sermons from Sound Truck—Ordinance Prohibiting Did Not Infringe Free Speech and Religion

Where defendant was convicted for violation of ordinance by broadcast of recorded sermons from loudspeakers on city streets, held, in sustaining conviction, that ordinance prohibiting same did not infringe defendant's constitutional freedoms of speech and religion. *Brinkman* v. *City of Gainesville*, 64 S. E. (2d) 344 (Ga., Mar. 15, 1951).

Oil Wells—Ordinance Requiring Permit Before Drilling in City— Lessee of State Land Subject to

In action against city to recover permit fee paid to plaintiff to drill oil well upon land owned by state within city, held plaintiff was subject to provision of city ordinance requiring permit, notwithstanding land was owned by state and fact that state retained royalty on oil and gas revenues from lease. *Plank* v. *City of Oklahoma City*, 229 Pac. (2d) 567 (Okla., April 3, 1951).

Policemen—Temporary Appointment —Rate of Pay Not Under Classified Service Until Permanent

Where appropriation ordinance fixed salaries of patrolmen in accordance with years of service as patrolman, such service under temporary appointment prior to certification and appointment to position in classified service could not be included in determining rate of pay under such ordinance. *Harman et al.* v. *City of Chicago*, 98 N. E. (2d) 148 (Ill. App., Mar. 13, 1951) *Reh. den.* April 4, 1951.

Parks—Infant Injured by Climbing Wall Contributory Negligence—City Not Liable

Where eleven-year-old boy went off walks provided for pedestrians in park and climbed between concrete decorative wall and ventilator system and squeezed through hole 19 inches wide by 20 inches in height and sustained injuries, held city was not liable. *Ware* v. *City of Cincinnati*, 98 N. E. (2d) 102 (Ohio Comm. Pleas, Hamilton Co., April 9, 1951).

Salaries—Mayor's Vote on Own Salary Invalid Even Though to Break Tie by City Council

Where mayor voted in favor of ordinance fixing his salary after three-to-three tie by city council, and council subsequently adopted ordinances reducing mayor's salary, held that mayor's vote on prior ordinance was invalid since public policy forbids city officer to act in matter affecting public when he has direct interest therein. *Davis* v. *City of Jenkins et al.*, 238 S. W. (2d) 475 (Ky., Feb. 13, 1951).

Sewers—Assessments on One District For Improvements in Another District Void

Where city levied special assessment upon realty located within boundaries of one sewer district for improvements to sewer in another district, held that assessment was void. *Besack* v. *City of Beatrice*, 47 N. W. (2d) 356 (Nebr. April 6, 1951).

Sidewalks—Defect Causing Injury— Contributory Negligence Where the Plaintiff Has Choice

In action against city to recover for injuries from fall into hole 2½ feet long, 2 feet wide, and 3 inches deep in sidewalk, held that trial court instruction, that if there were two ways open, choice by plaintiff of the dangerous one with knowledge of danger constituted contributory negligence, was not erroneous and judgment for city affirmed. *Blake* v. *City of Concord*, 64 S. E. (2d) 408 (N. C., April 18, 1951).

Slum Clearance — Constitutionality Of Statute Giving Housing Authority Discretion to Sell or Lease

In action by housing authority to test constitutionality of slum-clearance statute, held statute was not unconstitutional as delegation of legislative power to housing authority and city, or as authorizing taking of property for private purpose because it gave authority discretion either to construct and lease or sell or to sell or lease for reconstruction. *Nashville Housing Authority* v. *City of Nashville*, 237 S. W. (2d) 946 (Tenn., Mar. 9, 1951).

Solicitors — Foreign Company Delivering Meat by Agent in City —Validity of License Tax

In action by company to enjoin city from enforcing ordinance imposing license tax on persons selling goods at wholesale and delivering them in sellers' own conveyance, held that ordinance was unconstitutional as unduly interfering with interstate commerce as applied to foreign corporation making delivery of meat orders in its own conveyances by agent in city. *City of Winchester* v. *Lohrey Packing Co.*, 237 S. W. (2d) 868 (Ky., Mar. 16, 1951).

Storm Sewers—Defective Private System Leading to City System— City Not Liable for Damages

In action against city to recover damages allegedly caused by failure of city to care for storm sewers, held that city was under no duty to maintain and keep in repair plaintiff's private drainage system leading to municipal sewer system. *Malverne Inv. Co.* v. *City of Trinidad*, 229 Pac. (2d) 945 (Colo., April 2, 1951).

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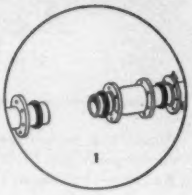
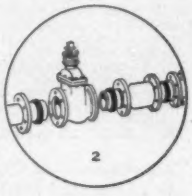
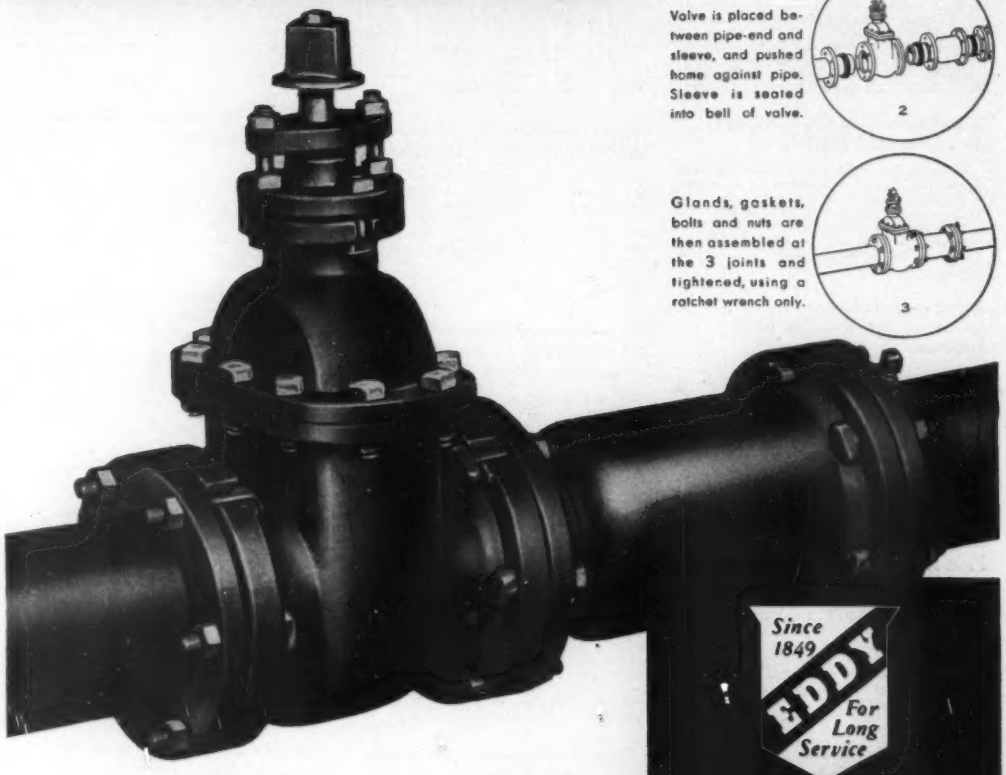
After excavation and removal of section of pipe, glands and gaskets are placed on pipe and sleeve. The sleeve is then pushed into position.



Valve is placed between pipe-end and sleeve, and pushed home against pipe. Sleeve is seated into bell of valve.



Glands, gaskets, bolts and nuts are then assembled at the 3 joints and tightened, using a ratchet wrench only.



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Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Charles F. Schwalm
Hamilton, Ohio

L. Z. Dolan
Johnson City, Tenn.

L. L. Hill
St. Joseph, Mich.

Leon Carver
Burkburnett, Texas

W. B. Avery
Manhattan, Kans.

R. A. BEERS, former aircraft production superintendent, is the new city manager of Edinburg, Texas, succeeding HENRY P. GRIFFIN.

Pawhuska, Okla., has appointed HENRY E. BOWEN to succeed L. L. HOUSTON. Mr. Bowen will leave an administrative post with the Rural Electrification Administration to take over the position.

Kearney, Neb., has appointed its first city manager. He is CLAIR C. CONGDON, former manager of Hopkins, Minn.

The new manager of Carrizo Springs, Texas, is CHESTER C. COURTNEY. He succeeds DEL GREEN.

A. E. FELLERS, a former manager of Cadillac, Mich., is the new manager of Lapeer, Mich., succeeding L. FRED PEACE.

MURRAY W. FULLER, formerly assistant manager of Salina, Kans., is first manager of Madison, S. D.

JOHN R. HAMMAN will leave the managership of Chickasha, Okla., on September 1 to take J. D. CHEEK's place as manager of Ada, Okla.

Winter Park, Fla., has appointed EARL HARPOLE, who was assistant to former manager Cornelius Bodine, JR., as its new city manager.

LEONARD HARRIS is the new manager-clerk of the city of Stambaugh, Mich.

The first manager of Augusta, Kan., is R. J. HAYES, former manager of Colby, Kans.

DONALD E. KNECHT, a former manager of Heavener, Okla., has succeeded Leon Carver as manager of Chandler, Okla.

JOHN B. LADUEX will leave the managership of Sterling, Kans., to become manager of Russell, Kan., to succeed J. H. Wigglesworth.

The first city manager of Farmington, Mich., is ANGUS G. LEITCH, who was city engineer for Tecumseh, Mich., before taking office in Farmington.

JOHN D. PHILLIPS, who was assistant manager and has been acting manager since Ross Miller left, has now been appointed city manager of Berkeley, Calif.

The Public Works Superintendent of Trenton, Miss., W. E. RALLS, has been appointed as the new city manager of Glenwood Springs, Colo., succeeding James L. Galloway.

The first city manager of Savannah, Tenn., is H. E. Ross.

JOHN L. SULLIVAN has succeeded James S. Duckett as city manager of Alice, Texas.

JOSEPH A. WARREN has moved from Ashland, Wis., to become manager of Jackson, Mich., where he formerly served as assistant manager. He takes over the position vacated by C. H. Elliott.

The first manager of Black Mountain, N. C., is W. DEAN WILLIS, who has been town clerk and treasurer.

City Manager Reports On Fire Protection

BELOW is the gist of a pamphlet "Your Fire Department Reports", of which 5,400 copies were prepared on our Model 75 Multigraph machine and mailed to property owners in the city from water department billing list. It is the first folder in a series to acquaint the people with the problems of the various departments.

TO THE PEOPLE OF BIRMINGHAM:

If a bad fire broke out on the west side of Birmingham, followed shortly by another urgent call from the east side, we would be in trouble. All of us in the city government know this. We only hope we can continue to meet the needs for adequate protection and that the fates will be kind to us.

We know that the present location of the Fire Department, in the Municipal Building, is not good enough for our future needs. We know that the time must come when Birmingham will have two major locations for fire-fighting equipment—one on the east side and one on the west. We have acquired prospective sites on both side of town.

For 1951, that is the most that can be done, but year by year we will plan and execute a program to provide the buildings, equipment, personnel, and training necessary for a well-rounded, completely adequate Fire Department.

We know that this will cost money and will need the support and interest of all the citizens, and to that end we will report to you as each step is taken or proposed, so that adequate public discussion and suggestion will be assured.

Sincerely,
D. C. EGBERT, *City Manager,*
Birmingham, Ala.

Employ Handicapped

SIX years ago Congress authorized National Employ the Physically Handicapped Week and designated the first full week in October for its annual Observance. This year, October 7 to 13 provides an excellent time for local officials to assist in this important national program, both by giving it wide publicity, and, where possible, re-examining the job structure in their own municipal governments to see if vacancies exist which can be filled by those handicapped.

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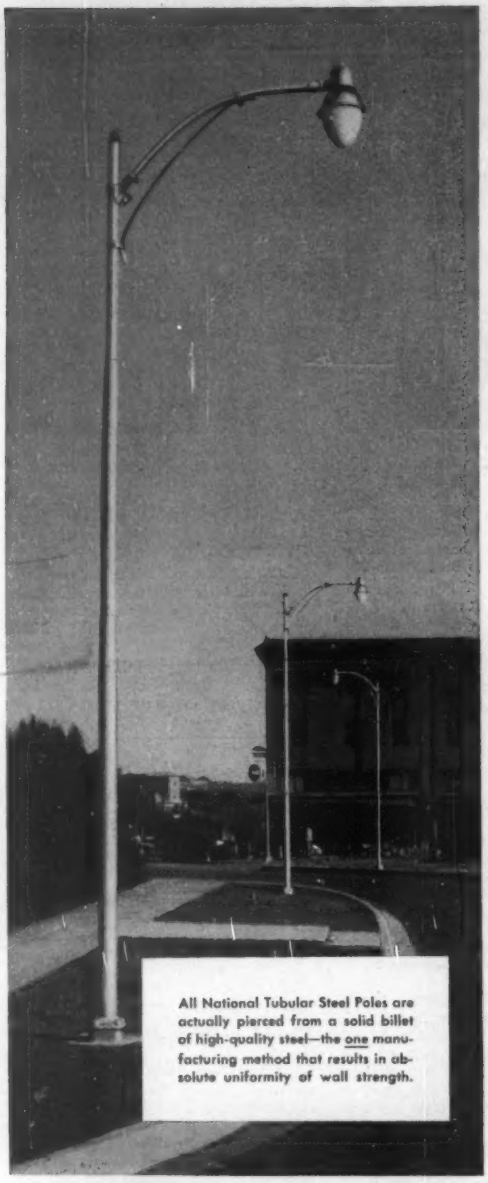
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Why Not Have Modern Street Lighting in Your City?

WHAT'S needed to have good and better street lighting was presented from the utility, fixtures, and electrical cables standpoints in the August issue of *The American City*. The three papers dealt with the use of standardized materials, excessive glass breakage, water in luminaires, burning hours of lamps, modern brackets and mast arms, tall poles, packaged control units, transformer weights, fluorescent luminaires, conductor sizes, and newer types of cable. These engineering papers tossed out provocative subjects that are discussed in this issue by specialists.

JOHN W. YOUNG
New England Power Service Co.
Boston, Mass.

THE August issue of THE AMERICAN CITY presented three papers covering a wide range of topics and pointing up the equipment, operating, and maintenance matter encountered in furnishing street-lighting service. There has been progress in attaining lower maintenance and servicing costs to date—for example, with dust-tight fixture design. Some moisture difficulties have been overcome as well. However, with regard to luminaires, we need more data and research on the effect of heat from the lamp. Lamp and globe breakages and deterioration of wiring have been observed in instances recently, in the trend toward lamps of 10,000 lumens and above.

As to the type of distribution in street-lighting systems, the territory has considerable bearing on the selection. Series has its place and is not to be discarded lightly. However, network systems, the extensive area coverage of distribution systems, and the availability of control equipment makes possible the use of multiple distribution from a cost standpoint and the elimination of certain operating procedures considered a disadvantage at times with series. More field experience on this phase of street-light application would be helpful to everyone.

The wide attention given to more adequate luminaire supports and brackets design is an instance of obtaining improved equipment to meet both mechanical design and also the appearance of construction. The interchangeability of equipment is not only highly desirable, but necessary to obtain flexibility in construction, and also easy maintenance and the lowest practical cost of operation in the end. The days of special material design, odd cable, etc., have gone. The economics of street-light design are more important than in any previous period.

We do have superior equipment today, which is more efficient and better-designed equipment than at any time in the history of the art, and the application engineer should do his part in properly selecting and applying this equipment to furnish the most street lighting per dollar that is obtainable.

The sum total of the discussion on the broad scope of material in the papers should indicate the relative importance of various phases of the field of street lighting, and thus lead to more effort in perfecting street-light operation.

FRANK J. SCHMITT
Rochester Gas and Electric Corp.
Rochester, N. Y.

BETWEEN World War I and the depression of the early '30's, our utility and manufacturer energies were devoted to doubling the size of the street-lighting systems. Little time was left for seeking improvements, which now seem an obvious necessity.

Better fixture design and application can be linked with the introduction of Alzak aluminum and various other similarly used metals somewhere around 1935, and until 1940 the use of new equipment progressed satisfactorily when we consider that street-lighting business is geared to municipal economy and tradition.

Utilities aided by manufacturers have adopted programs of modernization to bring about uniformity on a step-by-step transition basis. We need time, untroubled by national emergencies, for the utility sales engineer to lead municipal officials into the field of more and better lighting within the economic realm of realistic ratios of investments to revenues.

Concern over prices—whether cable, conduits, or steel poles—indicates the need for revised consideration of using aerial wire on ornamental poles in place of expensive underground conductors, utilizing less costly poles such as the available machined and sanded wood poles. These poles lend themselves to residential streets and wooded parkways. Steel shortages add force to this thought.

R. W. LOEHR
Westinghouse Electric Corporation
Cleveland, Ohio

MR. BJONTEGARD presents an excellent review of some of the more important problems facing both the manufacturers and users of street-lighting equipment. Most of the problems presented have received considerable attention from individual manufacturers and users but have not been covered adequately in papers of national scope. Such coverage should help to clear up much of the mystery that surrounds the troubles reported by users.

The summary of possible reasons for glassware breakage should prove particularly helpful. The effect of lamp leakage should not be overlooked in such an analysis. Leaky lamps can pro-

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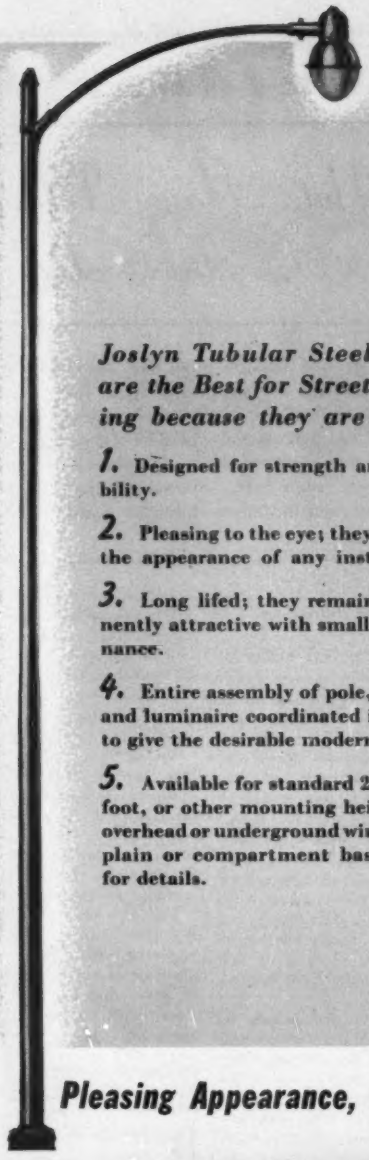

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duce substantial increases in temperatures through bulb-wall discoloration, and through abnormal increases in the wattage of series lamps occurring prior to filament failure. On one recent test, a 30% increase in wattage was measured. Increases of this magnitude apparently are the result of uniform filament evaporation encountered in the presence of oxygen.

As pointed out by the author, all luminaires breathe. A luminaire must be designed to admit air but exclude water when the luminaire is cooled by rain. To accomplish this, mating members must be arranged to prevent formation of a water seal between adjacent surfaces.

R. L. SMYTHE
Line Material Co.
Milwaukee, Wis.

MORE joint papers of this kind should be encouraged as the users' and manufacturers' opinions are coordinated.

With reference to glassware failure, it is also the trend to eliminate gaskets which allow the glassware to contact the metal reflector to encourage heat transmission and thereby lower the temperature gradient of the glassware.

Further, it is frequently found that the recommended rating of film cutout is not used, with the result that there is lamp arcing and overheating after lamp failure and a consequent failure of glassware, receptacles, and sockets.

The methods of attaching glassware are varied, each having specific desirable features, but the hinged ring with an automatic latch is rapidly gaining popularity.

I question if built-in breathers are necessary, as 4½ years' tests and thousands of luminaires in service definitely indicate that adequate breathing action can also be obtained by proper design and taking advantage of manufacturing tolerances of glassware and companion parts.

After running extensive tests on numerous sealing compounds for top-mounted luminaires, the Line Material Company has found that Lake Chemical Company "Pipetite" and Crane Company thread lubricant also meet the requirements for a permanent sealing compound.

A desirable contribution to standards could be made if the cable manufacturers would standardize on the over-all dimensions for series duplex street-lighting-bracket cable for each voltage.

L. F. HECKMANN
The Union Metal Mfg. Co.
Canton, Ohio

STREET lighting has made tremendous advances in the last decade to the great benefit of every citizen. Adequate visibility for the pedestrian and motorist, as well as the homeowner, is a necessity.

It is gratifying to learn that suppliers of street illumination recognize its importance, and that it "pays off" to use modern equipment. Street lighting, only a few short years ago, consisted of a few decorative lamp standards in business centers, and small "bug" lamps mounted on span wires or goose-necked brackets at intersections in the residential areas.

Today, street lighting is planned—entire cities are surveyed and proper lighting to meet the requirements of the particular section is provided. The Illuminating Engineering Society has set forth a recommended practice adopted by the American Standards Association, from which mounting heights and spacings of luminaires can be determined for various street widths and local conditions. The recommended mounting heights are such as to allow leeway in design for the conditions aforementioned. A specific recommendation of 28 feet, or any other specific height, might limit the designing engineer in the selection of the proper equipment.

The Edison Electric Institute (E.E.I.) and the National Electric Manufacturing Association (N.E.M.A.) have a Joint Committee to establish sensible specifications for all types of street-lighting equipment. Much work has been done by this committee and in February of this year several specifications were officially published—several more will be issued before the end of the year.

Manufacturers' engineers have developed new and more efficient light sources, fixtures, cable, and street-lighting poles with the idea of giving the citizen adequate illumination at least cost.

The old multiple-parts poles with the top-mounted luminaires are now outmoded except for replacement and repair, or, in some cases, where they are used for the beautification of institutional grounds.

The approach to costs of street lighting and automobiles on a cost-per-pound basis is a new one, but doesn't prove too much, because automobiles, generally speaking, are manufactured on a mass-production basis; whereas street-lighting poles and equipment are so often tailor-made to suit the individual power company's ideas. It is suggested that the users of this equipment standardize, so that it can be made on a production line which will help a great deal to lower costs. Actually, the costs of materials and labor are the real answers to the increased costs of equipment, including street lighting. For example: raw steel prices are up over 100% from those of the middle '40's. The cost of labor has increased 70 to 75%.

From a pole standpoint, a modern 25- or 30-foot pole can be had for what a 12- or 15-foot ornate upright type cost in 1940.

It would be ideal to illuminate streets without the use of poles or luminaires, but since that is impossible, these necessary evils should be strong, yet slender and graceful. Most of the street-lighting poles in use today are made of concrete or steel with great strength; however, in the last few years considerable development progress has been made in the use of aluminum for poles.

Two solutions for decreasing the cost of street-lighting systems have been given, both of which seem to have merit. Overhead wiring, used extensively in the Middle and Far West, and the 20-ampere circuit have both been used with considerable success and savings in installation costs. A third method to reduce costs is the use of standardized lighting equipment.

Development engineers are constantly improving street-lighting equipment to give the most efficient equipment and the most satisfactory lighting at the least expense. Again, it is encouraging to see the suppliers of street illumination (utility companies and municipal lighting divisions) recognize the importance of keeping abreast with these developments.

G. W. ZINK
Habirshaw Cable and Wire Div.
Phelps Dodge Copper Products Corp.
Yonkers, N. Y.

MR. GRAHAM has made a very good presentation of the manufacturer's point of view on street-lighting cable. I would like, however, to call attention to some points which, although they may be of more direct interest to the consumer, also present a problem to the manufacturer.

In referring to underground nonmetallic-sheathed cable it is claimed to be "an almost ideal approach for an underground series-lighting cable." The "almost" rightly casts some doubt on the universal use of this construction. It should be pointed out that such cables are not as rugged as the old lead and steel-taped parkway cables which they have largely replaced, and consequently should be installed with more care. Most failures in these cables are due to mechanical injuries, and often additional protection is advisable. In some locations termite attack can be serious, and in such cases the cable should be protected by a bronze or other non-corrosive tape. When so protected, the cable becomes essentially a shielded cable and acquires all of the advantages as well as the disad-

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And good street lighting is appreciated. For example, in Vineland, N. J., when the new lights went on citizens were so pleased, city officials immediately ordered more of the new lighting. The Mayor of Beaver Falls, New York, put it this way, "Our new street lighting is the talk of the town."

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vantages of this kind of construction.

Mr. Graham also suggests the use of polyethylene for pole and bracket cable. It has been so used successfully, but here again a word of caution would seem advisable. The temperature in some fixtures is very high and exceeds 75° C. to 80° C. These temperatures are probably not exceeded in this part of the country, but it is quite possible to exceed them in the South. Polyethylene is an excellent material when used with an understanding of its limitations. Being a thermoplastic with a sharp flowpoint, however, it can be ruined by one period of over-heating, such as might occur when a defective control switch energizes the circuit with midday tropical sunshine on the fixture. A heat-resisting rubber insulation would withstand several such accidents.

To keep the historical record straight, the first electric street-lighting installation consisted of 16 arc lamps in the Avenue de l'Opera in Paris in 1878. The first installation in this country was at Niagara Falls, N. Y., as stated.

S. J. ROSCH

Consulting Cable Engineer
Anaconda Wire & Cable Co.
Hastings-on-Hudson, N. Y.

A REVIEW of these three timely papers as well as a study of the history of street-lighting practices, reveals the following:

1. Street-lighting installations involve the use of a wide variety of equipment, the choice of which varies considerably throughout the United States.

2. In the past, some manufacturers of the individual items were prone to make changes in their respective designs without giving consideration to the effect these changes might produce on components manufactured by other suppliers.

3. Where such changes were made, they undoubtedly were dictated by the desire to lower cost, improve ornamental features, or to overcome some inherent design weakness. Some of these well-intentioned changes, however, made it difficult for the cable manufacturer to make more universal use of some of the latest cable insulations and designs due to limitations of space, permissible bending radii, or inadequate dissipation of the heating surrounding the cable included in these components.

4. As an illustration of the effect of some of these design changes made without consulting those interested in other street-lighting components, it was brought out, in discussion by others, that temperatures as high as 120° C. (approximately 250° F.) were reached in the region adjacent to the light fixture of some of the standards. If this is so, then none of the insulations discussed in Mr. Graham's paper should be expected to yield a reasonable life because that is far in excess of the maximum permissible operating temperature of these insluations. Incidentally, this is the first occasion when we have been given any idea of the temperatures existing in these standards. We definitely need more of this type of information.

5. The greatest degree of progress in this field will be accomplished through the establishment of a joint committee under suitable sponsorship involving the consumer and the equipment and cable manufacturers for periodic discussions of the problems arising from present or proposed practices, and how they might best be solved. Mr. Gaffney is to be commended for suggesting such joint action.

DRAWN FOR THE AMERICAN CITY BY BILL SPRAGUE

The authors of the three papers which appeared in the August issue of *The American City* now comment on points made in the foregoing discussions and supply the additional data.

D. A. GAFFNEY, *Author of "What's Known and Needed in Street Lighting," has this to say:*

IT WAS a welcome statement by Frank Schmitt that because of our past efforts in expanding street-lighting systems, it is now obvious that we should improve the existing system. It is also true that much education is necessary to dissipate the psychological reaction against the use of our modern well-shielded units. Mr. Schmitt, in addition, brings to our attention the concern over increased prices, whether for cable, conduits, or steel poles.

John W. Young makes a good suggestion in that more field experience would be helpful to everyone in determining whether to install multiple or series street-lighting systems. And as the days of special material, design, odd cable, etc., have gone, the economics of street-light design are more important than in any previous period.

R. L. Smythe's suggestion that cable manufacturers standardize on the overall dimensions for series duplex street-lighting-bracket cable for each voltage should be given every consideration by the industry.

We welcomed L. F. Heckman's reference to cost comparison, as it reiterates our contention that if the industry in general would purchase streamlined ornamental light standards, the manufacturers could then mass-produce at less cost. As to standardization of heights of ornamental light standards, there was some evidence of such a trend when these standards were first placed in production. However, the intermediate heights are also now being produced, with about twice as many heights available.

A. M. BJONTEGARD, *Author of "New Facts About Street-Lighting Fixtures," makes the following comments:*

IT SEEMS safe to say that every manufacturer of luminaires is actively engaged in providing improved light distribution. Recent years have evidenced the results, as exemplified in luminaires for use with mercury lamps. When such lamps were first used in street lighting, there was concern about public acceptance of the characteristic color of mercury. As a result, one or two filament lamps were used in the same fixtures to provide color correction. In the very early days, such filament lamps were also considered necessary to provide heat to start mercury lamps at low ambient temperatures. A third function was to provide some illumination during the time required to

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Edgewater Park, Cleveland

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restart a mercury lamp when a power interruption occurred.

Such combination luminaires were fairly expensive initially, and the maintenance was high because of the necessity of replacing two or three lamps, having different hours of life, in the same luminaire. Finally, effective control of light from these several sources was never accomplished.

The early lamps were soon improved so that they would reliably start at low ambients with proper ballasts. During the war, the City of Denver found no adverse public reaction when they turned off the filament lamps in their combination mercury-incandescent luminaires. The effects of power interruption were discounted by the reliability of service provided by utilities. The combined effect of these factors was the introduction of luminaires designed expressly for use with a single mercury lamp. Such luminaires, introduced generally after the war, have found wide acceptance because of their accurately designed light control, their high efficiency, and their excellent utilization of light generated by lamps which are themselves far more efficient than filament lamps.

This development is cited as an example of the manufacturers' continuing efforts to provide improved luminaires having far better light control to satisfy the public demand for "comfortable seeing."

Non-Standardization of Cable Dimensions a Problem

There appears to be wide variation in dimensions of cable used in wiring street-lighting luminaires, these variations occurring in both series and multiple cable in both single and duplex types.

As a result, the manufacturer of luminaires must make provisions for entrance of cable of many sizes into the fixtures. This becomes a problem when gland bushings are used, since a large number of sizes must be stocked if good shipments are to be expected. Quite frequently, time is lost in determining the cable dimensions to be used at installation even after luminaires are ordered at the factory.

There does appear to be an opportunity for standardization of dimensions of cable for different voltage classifications within the industry.

It is suspected that pole and bracket cable is frequently misapplied. Perhaps the severity of the service and the degree of heating to which the cable is subjected are not fully appreciated. The use of pendant luminaires with base-up burning lamps results in high cable temperatures within luminaires, far different from the old pole-top luminaires.

The problem is being considered to an increasing degree by all concerned. Its trend is most encouraging and will doubtless result in further developments.

The following table summarizes some typical modern cable constructions suggested for street-lighting uses.

Service Application	*Cable Construction*	*Comments*
Overhead multiple wiring	Weatherproof wire (URC, neoprene- or polyethylene covered)	Open-wire construction
Overhead multiple wiring	(a) Neoprene or polyethylene insulated self-supporting cable (twisted around messenger)	Replaces open wire; control circuit can be included
	(b) Neoprene or thermoplastic insulated figure "8" cable	Replaces open wire; low cost
Pole-top wiring	Neoprene or thermoplastic insulated figure "8" cable	Low cost
Overhead series wiring	Weatherproof or bare wire	Must be supported on insulators
Underground series wiring (all voltages)	(a) Ozone-resistant insulation — neoprene sheath	Good service record; direct burial
	(b) Heat- and moisture-resistant insulation—neoprene sheath	Good service record; direct burial
	(c) Polyethylene	Low cost; direct burial
	(d) Polyvinyl chloride	Low cost; direct burial
Ornamental pole wiring	(a) Ozone-resistant belted type	IPCEA standard
	(b) Ozone-resistant twisted type	For special application
	(c) Polyethylene belted type	Small diam.; low cost

R. C. GRAHAM, who wrote "Consult Your Cable Manufacturer for Wiring Results," states:

MR. GAFFNEY rightfully raises the question that since reliable performance and long life are desired in cables buried directly in the earth, the operating engineer is interested in data and information to substantiate the choice of cable. In this connection, the Rome Cable Corporation Laboratories have been conducting long-time tests on insulations continually submerged in water as representative of possible service conditions.

Mr. Bjontegard described a troublesome cable problem wherein the metal current carrying parts of fixtures could become badly corroded by sulphur compounds driven out of the rubber insulation of the cable. We believe this condition was probably associated with rubber compounds possessing a high sulphur content—encased in an impregnated cotton braid. Today, we have extremely low-sulphur, heat-resistant compounds that should alleviate this trouble. These compounds also possess excellent moisture stability. Neoprene, as a sheathing material, also acts as a corrective measure, since such compounds are practically sulphurless. Moreover, the impregnated cotton braid under high heat conditions may well release contaminating products to discolor the luminaire, where neoprene would eliminate this effect.

Termite Protection

Mr. Zink's comment regarding termite protection is a good one. However, termite attack on buried cable is a remote and not a general condition. Therefore, special termite protection, such as a bronze tape, as suggested by Mr. Zink, is recommended only for areas where this problem is anticipated. His caution in regard to high temperature effects on polyethylene is important. So far, we are not aware of any deteriorating temperature effects on polyethylene from actual service in lighting fixtures.

In the October Issue

THE MANUFACTURERS who make the equipment that produces good street lighting present very brief descriptions of their products. A desire for good lighting and a knowledge of what it is are of little use unless the right equipment is available. Almost as important as the equipment itself is the manufacturers' keen interest in seeing that it is understood and correctly applied.

Next month's *Who's Who in Street Lighting Equipment* will be of special value in showing who these manufacturers are and what they have for the municipal officials who say "indeed, why not have modern street lighting in our city?"

Watch for the October issue.

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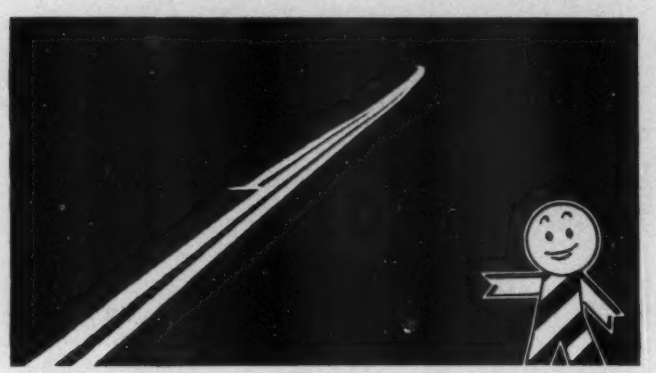

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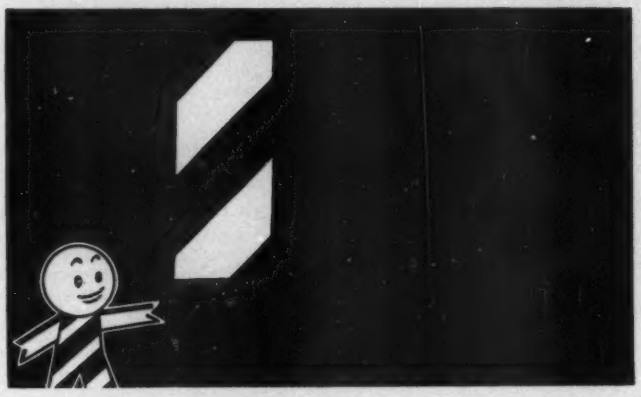

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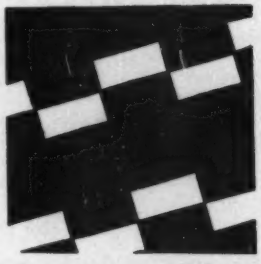

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Hope for Public Transit

By COL. S. H. BINGHAM
Chairman
Board of Transportation
New York, N. Y.

AN EXPENSIVE service at too low a price is not a business. Good riding can be provided either by revenue or by a subsidy whose amount will be moderate in proportion to the energy, skill, and courage of the management. Here, a non-political City Transit Corporation is proposed for early action in cities that need better local transportation and are tired of fiddle-faddling with failure.

INADEQUATE public transit is a bottleneck which throttles commerce in a city. Just look out of a window from a downtown building in almost any city in the United States. Yet, by the cooperation of city planners and public-service operators, public transit can be made a swift, safe, efficient, free-flowing means for moving people.

Why the doubts about the future of transit, and why the peculiar history of transit? Well, transit is one of that small group of industries classified as public utilities. That means it is essential to the public at large; and it also apparently means that every member of that public considers himself an expert in the business. There never has been another business more subject to study by experts and consultants of all kinds. It also means that it is subject to regulation by public bodies.

Regulation creates a lag between rising costs in the industry and offsetting fare increases. In any other business, we grumble but are reconciled to the fact that the price of an article or a service depends on the cost of production. When the auto workers' union wins an increase in hourly rates, and material prices rise, we expect an increase in the price of cars — and we are rarely disappointed. But when transit workers get an increase in rates, when federal and state taxes become more and more burdensome, and when the prices we pay for supplies go up, there is great public opposition to increase in fares. Generally the transit company has to show that it is losing money before it is granted any relief. And the relief is always delayed.

I'm not sure of the reason for this peculiarity of the industry. Many people simply refuse to recognize that in transit, as in any other businesses, the consumer must pay the cost of what he gets. The belief that the transit industry can be operated by private capital without profits is apparently one of those myths that dies slowly.

The Private Car

But not all of the troubles of the transit industry are based on myths. The private auto has had a profound effect, and a harmful one, on the transit industry. We have lost riders, particularly during the off-peak hours when we have ample capacity, and our operations have become more difficult and costly. Downtown traffic congestion and the conversion of our streets to outdoor parking garages for private cars slows our vehicles down to a crawl.

Another reality which we must face is decentralization. This makes our hauls longer, and we have to cover larger, more sparsely populated suburban areas. Growth of local shopping areas to serve these suburban developments has made additional cuts in our riding, again mainly during the off-peak hours.

Still another adverse factor is the change in general working conditions. The five-day week has eliminated much of our Saturday business. Long vacations and more holidays cut our riding further. The general equalization of working hours and shifts for all workers—in the factories as well as in offices—has made our rush hours more concentrated than ever.

These factors add up to less riding on transit vehicles with the greatest loss during off-peak hours; increasing concentration of our business into two rush hours for five days each week, and a slow-down of operation during these peak periods because of street congestion.

More Vehicles Needed

This means that we need as many as or more vehicles than before to meet our shortening peak-load periods. We need two full shifts of workers to man all these vehicles for only two short periods each day. We need the shops to maintain them and the space to store them. And we make full use of all of this equipment to its full capacity for perhaps 20 to 25 hours each week. During the rest of the time half or more of our equipment is idle. But overhead and capital charges and depreciation go on all the time, based on all this equipment. *Labor in the transit industry has secured tremendous advances in rates of pay and working conditions in the recent past. But the riders and regulatory officials must understand that these costs must be paid for.*

Many industries have overcome similar adverse developments by greater mechanization and making use of technological advances to reduce manpower requirements. We, too, have done this in the transit industry—by improving our vehicles and methods to reduce maintenance and operating requirements, and by increasing the size of vehicles so that one man and one vehicle can handle more passengers. But I do not foresee any radical improvements along these lines in the immediate future. So far as vehicles are concerned, we have pretty nearly reached the size limit for city operation. We shall probably see buses powered by gas turbine engines in five or more years, but not tomorrow.

What does this all add up to?

It adds up to a picture of an essential industry faced with rising costs in

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Canton 2, Ohio

a falling market; and confronted with the ever-growing competition of the private automobile.

Fare increases help us to a point. Beyond that point, however, the industry prices itself out of the market.

For immediate relief from traffic strangulation, I think our cities must look to their mass-transit systems. For the large cities, those that are most centralized and congested, some form of off-the-street rapid transit is required. In all other cities, the modern bus is the answer. It is at least 20 times more efficient in its use of street space than the private automobile.

If we eliminated parking and reduced unessential private-car traffic from the congested streets in the heart of our cities, we would free our streets and speed up the flow of people and the necessary commercial vehicle activities of pick-up and delivery of goods. Our transit vehicles would then move freely and rapidly and offer a much better service.

City Must Reduce Traffic

The city must help the transit company to achieve this by clearing as many parked cars as possible from its routes, by responding to the needs of the company for adequate revenues, and by not imposing needlessly burdensome taxes on an industry which is rendering an essential service. But if it comes to pass that the individual private company cannot furnish the type of service desired, at a fare considered reasonable, what then?

We must look for a new type of organization of transit that will provide this public service. The community must then take a much more active role in the provision of this essential service—even to the point of becoming a partner in the enterprise and controlling its operations.

I have evolved a formula which I am confident is applicable in broad outline to most cities which may have to enter the bus-transit business. My proposal calls first for *a new type of government business entity.*

A City Transit Corporation

This is a new kind of public transit corporation which, for want of a title, could be termed "City Transit Corporation." It would combine the best feature of private and municipal enterprise. It would retain the efficiency of operation known in the best competitive industry and the financial and other advantages of community operation.

This corporation would acquire the facilities and equipment of the existing private transit company or companies in its city through an exchange of revenue bonds for the physical assets and property. In this way, the private transit line is acquired with no outlay of municipal funds and with no strain on municipal borrowing power. It is paid for out of earnings.

One of the principal benefits under my formula would be freedom of the public corporation from the burdensome state and federal taxes which have been a large factor in the financial problem of the private companies. Without additional fare increases or use of funds from other sources, I believe this essential service can be made readily available under public ownership in most cities, and attractive enough to aid in the reduction of traffic problems. In cities where more than one local transit company operates, acquisition by the public transit corporation would permit elimination of wasteful competitive routes, and coordination of all mass-transit facilities to give the public the best possible service.

The revenue bonds should be issued for a term of 20 years. Purchase prices for some transit properties in the past have ranged between once and twice the gross annual income. The fare should be sufficient to pay operating expenses and debt service. With tax exemption on the transit property and a 20-year amortization period for the bonds, I believe that transit operation could produce sufficient revenue at a reasonable fare.

Management Problem

As management must be businesslike, my formula proposes a corporate form rather than merely establishing another city department. Over-all direction would be in the hands of a board of directors with government and bondholder representation. These directors should be men outstanding in the community, accustomed to the operation of a business enterprise.

The day-to-day operations and management control, under my formula, would remain in the hands of present management of the private companies—provided, of course, that the balance sheet and operating statement of existing management show it to be successful and alert to its responsibilities. The management would be given authority to run the property in the most efficient manner possible, but complete regulatory control would be vested in the city. This would divorce transit operation from the red tape of government and civil service. It would be run as other progressive private enterprises are.

Mass transit, an essential public utility, is in a period of severe economic stress. The powerful social and economic pressures on this industry are forcing it into a position where it may not be able to do its job under the usual pattern of private enterprise in this country. We must, therefore, devise a new pattern, using the best elements of both private and community enterprise to assure the continuity of this essential service.

I have suggested such a pattern, a public transportation corporation, in broad outline. Each community will, of course, have to work out the details to meet its own needs and circumstances.

Seven Benefits

Inherent in this formula, no matter how it is worked out in any city, are these seven benefits:

1. The municipality would ultimately become owner of the transit system which serves it.
2. It would acquire this system at no cost to the farepayer or taxpayer.
3. It would acquire this system with no outlay of its own general funds.
4. It would acquire this system without effect on its debt limit and without diminishing its borrowing power for other capital improvements.
5. It would have a coordinated transit system operating solely for the community's benefit.
6. The municipally owned public transit corporation could operate without pressure or restriction from outside.
7. The city would have assurances of continuity of this essential service.

This is, of course, no complete cure for all the ills of public transportation and traffic in our cities. But it is a fair statement of the problem and a sound approach to solving it. If I have encouraged you to recognize that this is a soluble problem and to consider the factors essential to the solution, I shall have accomplished a great deal.

See editorial comment below and on page 7.

Encourage Local Transit

IN VIEW of the basic efficiency and economy of local transit in the utilization of urban streets, every effort should be made to facilitate and encourage greater use of local transit facilities. This can be achieved either (1) through helping them to maintain their financial and operating stability under private operation, with capitalization, fares, and service being regulated by a state utility commission; or (2) by a well-designed official agency, within the metropolitan area, having jurisdiction over all types of local carriers.

Since efficient and improved public transit is dependent on its ability to attract investment capital, transit should be given a more favorable business climate in which to operate and should have relief from special and burdensome assessements. Unwarranted route extensions, and other unprofitable services affecting the financial stability of transit should be discouraged.

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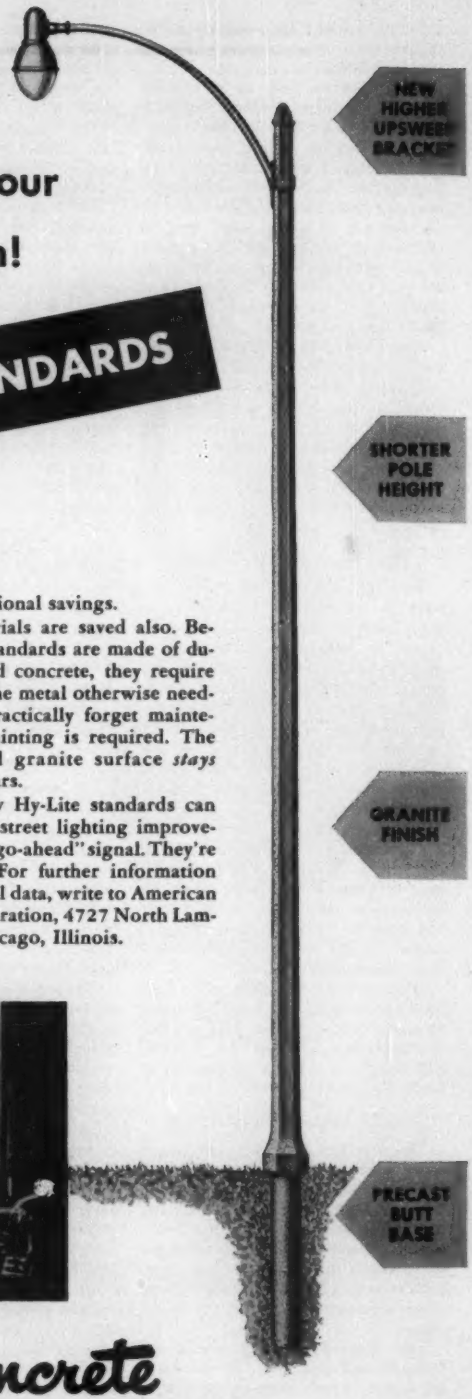

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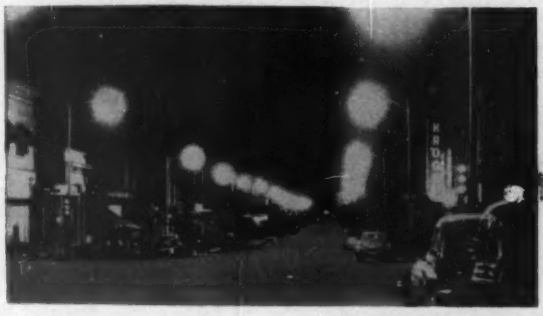

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Parking Meters Are Here to Stay

By JOHN A. MORAN
Vice-President
The Dual Parking Meter Company
Canton, Ohio

CONTINUING expansion of the use of parking meters to speed up on-street parking turnover, as well as for the steadily increasing municipal and commercial parking-lot fields, draws heavily on current supplies of meters. That the volume of shipments will continue as large as National Production Authority regulations will permit is assured by a steady flow of orders thus far this year and by the existence of some very large contractural obligations. Notable among these is an expansion order from Philadelphia for 15,000 more Dual meters, Chicago's inauguration of metered parking, and New York City's opening up to meters.

Although only two of the large metropolitan cities of the country (Atlanta, Ga., and Baltimore, Md.) have not yet taken action toward the installation of meters, few of the large cities have even scratched the surface as far as meter requirements are concerned. Accentuated by defense work as well as normal growth and expansion, traffic congestion and adequate space for parking continues to present a major problem in most urban localities. Even some decentralization of retail operations and the construction of huge new suburban shopping centers has not alleviated the downtown parking problems to any measurable extent, and meters are now being programmed for many suburban areas.

Increasing Demand for On-Street and Off-Street Installations

As of December 31, 1950, at least 2,623 cities in the United States had adopted metered-parking controls. Installations during 1950 in 583 new localities, and in old ones, for expansions and replacements, are estimated to have totaled approximately 180,000 meters. Included in this total are off-street meters purchased and installed in municipal and commercial parking lots. The off-street parking meter demand is growing rapidly and the utilization of meters in this field is expected to expand tremendously in the next few years. In some localities, privately owned and attendant-operated lots and garages make substantial off-street parking space available, but as a general rule the private or commercial field seems unable to meet the challenge for sorely needed facilities. Consequently, municipal ownership and operation of off-street facilities is expanding, in many instances, with meter controls which provide a practical and economical means of regulating parking space.

Wider Permissive Legislation Needed

A lack of permissive legislation in many states appears to be the main deterrent to municipal ownership and operation of off-street facilities. Only 32 states had laws at all permissive of this sort of operation as of the end of 1950. Most of those laws varied greatly in structure and seem, in too many cases, to follow the theme that if the city has a surplus of cash, it may under certain conditions acquire property for off-street parking. Legislation permitting recoupment by municipalities, in whole or in part, of the cost of establishing and maintaining off-street facilities through parking charges and fees levied against the users or beneficiaries was apparently existent in 13 states and the District of Columbia. General-obligation bonds for financing such programs were permitted in only five states; revenue bonds, which would appear to offer the most satisfactory method of financing, were provided for in seven states. Evidently these conditions have been receiving more attention of late, however, for permissive legislation activities have been noted in several important states this year, including Connecticut, Delaware, Florida, Massachusetts, and Vermont.

Extensive Replacements Needed

The need for replacement of worn-out and obsolete equipment is fast becoming a problem which many cities must solve—in the not-far-distant future, too. While the better-quality meters are generally considered to be good for 8 to 12 years' operation—with proper attention paid to maintenance and repair—meters in many localities are fast becoming worn out or obsolete by changing conditions, new developments in meter design, changes in coin and time combinations, and collection features. Financing of meter replacements poses serious problems in many cities where meter revenue has gone into general funds or has been budgeted to cover general traffic control and many other expenses. In far too many cases no reserve funds have been set aside and accumulated, as they should have been, for inevitable replacement expense.

It is estimated that approximately a million parking meters are in service in the United States and Canada today; more than three-fourths of them have been placed in operation since World War II. Any comprehensive analysis of the future potential volume of meter sales for expansions, replacements, and off-street parking would be so weighted by attempts to measure the continuing effects of government channeling of metals to defense production and stockpiling as to make predictions inconclusive at this time. Competition continues to be keen among the major manufacturers, notwithstanding the steady demand for more higher-quality meters than can be produced, and the saturation point which used to be predicted by some interests appears as far away as when made.

Meters in Well Over 100 Canadian Municipalities

The Canadian parking-meter picture is following the same pattern of development as in the states. The first parking-meter installation was made in 1940 at Sudbury, Ontario, by the Dual Parking Meter Company. No other installations appeared in Canada until 1946; but each year since then, more and more municipalities have put in meters. At the end of 1950, 116 Canadian communities had parking meters. Despite the cold climate and relatively short seasons in many areas, only two reports of discontinuance of meters are recorded. The year 1950 was particularly active, and steady demand continues in 1951—one important feature of which is Toronto's current plans for meters.

Summarizing the case of parking meters, in 15 years they have won generally wide acceptance on the part of the motoring public and traffic experts; they provide much-needed municipal revenue in many instances; and their continuously expanding use for both on-street and off-street parking controls appears to be a certainty.

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Conventions — When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Sept. 5-7—Washington, D. C.
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Convention (Hotel Statler). Sec., Louis D. Brown, 30 Rockefeller Plaza, New York 20, N. Y.

Sept. 9-11—Fargo, N. D.
LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Convention (Hotel Gardiner). Exec. Sec., Myron H. Atkinson, Bismarck, N. D.

Sept. 9-13—Poland Spring, Maine
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Conference. Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago, Ill.

Sept. 10-12—Boston, Mass.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Convention (Hotel Statler). Sec., Joseph C. Knox, 73 Tremont St., Boston 8, Mass.

Sept. 10-12—Pocono Manor, Pa.
PENNSYLVANIA MUNICIPAL AUTHORITIES ASSOCIATION. Annual Conference (Pocono Manor Inn). Sec., Charles F. LeeDecker, 103 Sparks Bldg., State College, Pa.

Sept. 11-13—Marshalltown, Iowa
IOWA SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Tallcorn). Sec.-Treas., Leo Holtkamp, P. O. Box 310, Webster City, Iowa.

Sept. 12-14—Minneapolis, Minn.
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Conference (Hotel Nicollet). Sec.-Treas., Leonard N. Thompson, 216 Court House Bldg., St. Paul 2, Minn.

Sept. 13-14—Detroit, Mich.
AIR POLLUTION AND SMOKE PREVENTION ASSOCIATION OF AMERICA—East-Central Section. Program Chairman, J. W. Shaw, Detroit Smoke Abatement Bureau, 112 E. Jefferson, Detroit 26, Mich.

Sept. 13-14—Whiteface, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Fall Meeting (Whiteface Inn). Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York 20, N. Y.

Sept. 13-15—Johnstown, Pa.
LEAGUE OF CITIES OF THE THIRD CLASS IN PENNSYLVANIA. Annual Convention. Postponed until further notice. Pres., Walter E. Greenwood, City Hall, Harrisburg, Pa.

Sept. 13-15—Saranac Inn, N. Y.
COUNTY OFFICERS' ASSOCIATION OF NEW YORK STATE. Annual Convention (Saranac Inn). Exec. Sec., Donald C. Scribner, County Bldg., Johnstown, N. Y.

Sept. 13-15—Wilkes Barre, Pa.
PENNSYLVANIA STATE ASSOCIATION OF COUNTY COMMISSIONERS. Annual Convention (Sterling Hotel). Sec.-Treas., Herbert S. Bolger, Court House, Hollidaysburg, Pa.

Sept. 16-18—Roanoke, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Convention (Hotel Roanoke). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

Sept. 16-19—Detroit, Mich.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention (Veterans Memorial Bldg.). Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

Sept. 17-19—Louisville, Ky.
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Louisville Kentucky Hotel). Sec., R. P. Farrell, State Dept. of Public Health, 420 Sixth Ave. N., Nashville, Tenn.

Sept. 17-19—Topeka, Kans.
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention (Municipal Auditorium). Exec. Dir., John G. Stutz, 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 17-20—San Francisco, Calif.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual Meeting (Mark Hopkins Hotel). Sec., Irvin Shulsinger, 11 W. 42nd St., New York 18, N. Y.

Sept. 18-20—Norfolk, Nebr.
LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Convention (Hotel Madison). Exec. Sec.-Treas., C. E. Beals, 407 Continental Bldg., Lincoln, Nebr.

Sept. 19-21—St. Joseph, Mich.
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Convention (Whitcomb Hotel). Exec. Sec., T. L. Vander Velde, Dept. of Health, Lansing 4, Mich.

Sept. 19-21—Philadelphia, Pa.
AMERICAN WATER WORKS ASSOCIATION—Pennsylvania Section. Annual Meeting (Bellevue-Stratford Hotel). Sec., L. S. Morgan, State Dept. of Health, Greensburg, Pa.

Sept. 20-21—Milwaukee, Wis.
LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Convention (Hotel Schroeder). Exec. Sec., Frederick N. MacMillin, 30 E. Johnson St., Madison 3, Wis.

Sept. 19-21—Yankton, S. D.
SOUTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Convention (Charles Gurney Hotel). Sec.-Treas., Charles E. Carl, State Dept. of Health, Pierre, S. D.

Sept. 23-26—New York, N. Y.
AMERICAN CHAMBER OF COMMERCE EXECUTIVES. Annual Conference (Hotel Commodore). Exec. Sec.-Treas., Miss Elizabeth Glenn, 1615 H St., NW., Washington, D. C.

Sept. 24-25—Denver, Colo.
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Convention (Cosmopolitan Hotel). Exec. Sec., George J. Turre, Board of Water, Denver, Colo.

Sept. 24-26—Biloxi, Miss.
AMERICAN WATER WORKS ASSOCIATION—Alabama-Mississippi Section. Annual Meeting (Buena Vista Hotel). Sec., Charles W. White, State Dept. of Public Health, 537 Dexter Ave., Montgomery 4, Ala.

Sept. 24-27—Los Angeles, Calif.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Convention (Ambassador Hotel). Exec. Sec., Fred W. Hurd, 211 Strathcona Hall, New Haven 11, Conn.

Sept. 25-27—Milwaukee, Wis.
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Hotel Pfister). Sec.-Treas., Leon A. Smith, City Hall, Madison 3, Wis.

Sept. 26-27—Gilbertsville, Ky.
KENTUCKY MUNICIPAL LEAGUE. Annual Convention (Kentucky Dam Village State Park). Exec. Sec.-Treas., Carl B. Wache, University of Kentucky, Lexington, Ky.

Sept. 26-28—Fargo, N. D.
NORTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Convention (Hotel Gardner). Exec. Sec., Jerome H. Svore, Chief Sanitary Engineer, Bismarck, N. D.

Sept. 27-28—Toledo, Ohio
AMERICAN WATER WORKS ASSOCIATION—Ohio Section. Annual Meeting (Commodore Perry Hotel). Sec., F. P. Fischer, Wallace & Tiernan Co., 812 Perry Payne Bldg., Cleveland 13, Ohio.

Sept. 29—Livingston, N. J.
NEW JERSEY SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Outing (Doerr's Grove). Sec.-Treas., Michael S. Kachorsky, P. O. Box 766, Manville, N. J.

Sept. 30-Oct. 2—St. Joseph, Mo.
AMERICAN WATER WORKS ASSOCIATION—Missouri Section. Annual Convention (Hotel Robidoux). Sec., Warren A. Kramer, Division of Health, State Office Bldg., Jefferson City, Mo.

Oct. 1-4—Cincinnati, Ohio
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Netherland Plaza Hotel). Gen. Sec., Arthur W. Baker, 292 Madison Ave., New York 17, N. Y.

Oct. 1-5—Boston, Mass.
NATIONAL RECREATION CONGRESS. Annual Convention (Hotel Statler). Sec., T. E. Rivers, 315 Fourth Ave., New York, N. Y.

***Oct. 3-5—Kansas, Mo.**
MISSOURI MUNICIPAL LEAGUE. Annual Meeting (Muehlebach Hotel). Exec. Dir., Bruce J. Carl, 214 Guitar Bldg., Columbia, Mo.

***Oct. 3-5—Savannah, Ga.**
GEORGIA MUNICIPAL ASSOCIATION. Annual Meeting (De Soto Hotel). Sec., Zach Arnold, 1403 C & S Bank Bldg., Atlanta, Ga.

Oct. 3-5—Watertown, S. D.
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Convention. Sec., R. D. Falk, Law Bldg., University of South Dakota, Vermillion, S. D.

***Oct. 4-5—Charleston, W. Va.**
AMERICAN WATER WORKS ASSOCIATION—WEST VIRGINIA SECTION. Annual Meeting (Daniel Boone Hotel). Exec. Sec., Harry K. Gidley, Director Division of Sanitary Engineering, State Dept. of Health, Charleston 5, W. Va.

***Oct. 4-5—Los Angeles, Calif.**
WESTERN GOVERNMENTAL RESEARCH ASSOCIATION. Annual Conference (Hotel Alexandria). Pres., Garrett R. Breckenridge, Bureau of Public Administration, 346 Library Annex, University of California, Berkeley 4, Calif.

***Oct. 5—Chicago, Ill.**
NATIONAL NOISE ABATEMENT SYMPOSIUM. Annual Meeting (Technology Center). Chairman, Dr. H. A. Leedy, Armour Research Foundation of Illinois Institute of Technology, Technology Center, Chicago 16, Ill.

Oct. 7-9—Peoria, Ill.
ILLINOIS MUNICIPAL LEAGUE. Annual Convention (Hotel Pere Marquette). Exec. Dir., A. L. Sargent, 537 S. 4th St., Peoria, Ill.

Oct. 7-11—Detroit, Mich.
CIVIL SERVICE ASSEMBLY. Annual Convention (Hotel Statler). Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

Oct. 8-11—St. Paul, Minn.
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Meeting (Municipal Auditorium). Exec. Sec., W. H. Wisely, 325 Illinois Bldg., Champaign, Ill.

Oct. 8-11—St. Louis, Mo.
NATIONAL ASSOCIATION OF ASSESSING OFFICERS. Annual Convention (Hotel Statler). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

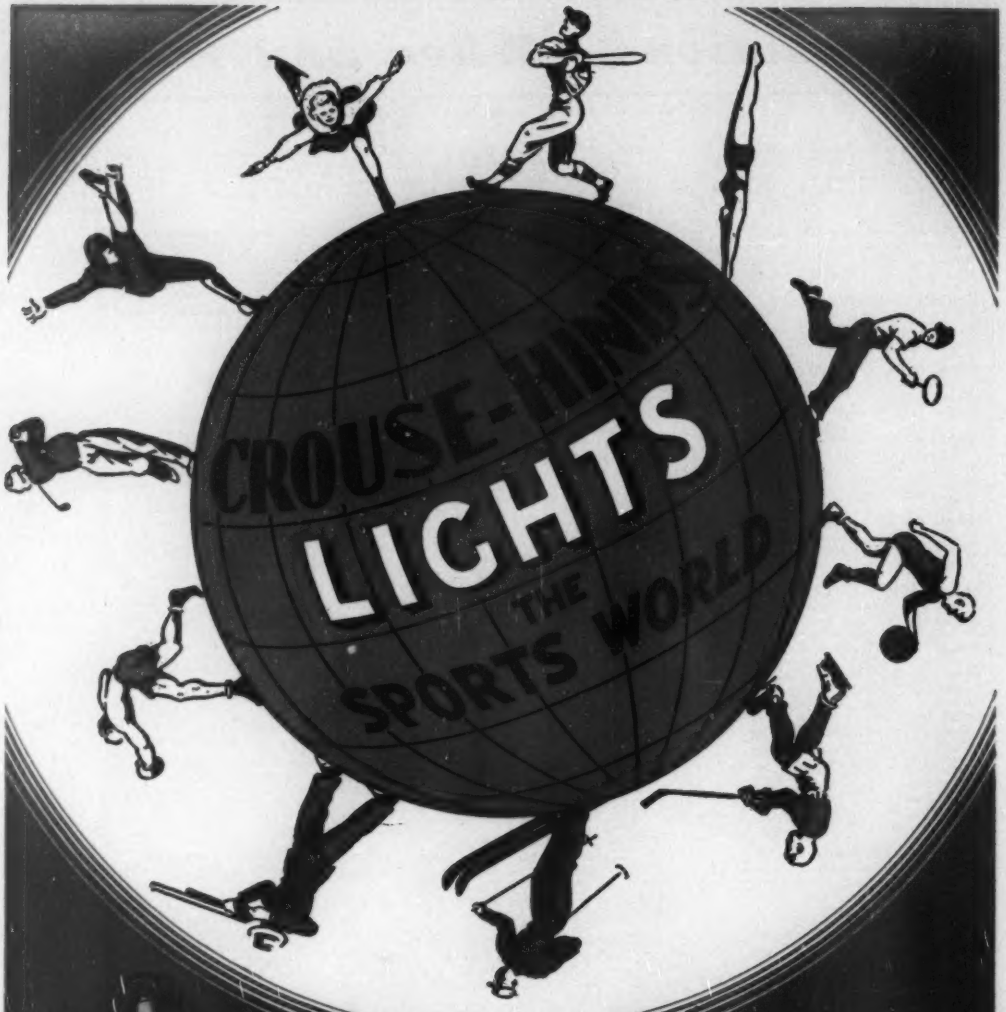
Oct. 8-12—Chicago, Ill.
THIRTY-NINTH NATIONAL SAFETY CONGRESS AND EXPOSITION. Annual Convention (Stevens Hotel). Gen. Sec., R. L. Forney, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

***Oct. 8-13—Asheville, N. C.**
CONCRETE REINFORCING STEEL INSTITUTE. Semi-Annual Meeting (Grove Park Inn). Managing Dir., H. C. Delzell, 38 S. Dearborn St., Chicago 3, Ill.

Oct. 9-12—Washington, D. C.
NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Convention (Hotel Statler). Dir., John M. Ducey, 1313 E. 60th St., Chicago 37, Ill.

Oct. 10-11—Des Moines, Iowa
LEAGUE OF IOWA MUNICIPALITIES. Annual Convention (Hotel Fort Des Moines). Exec. Sec.-Treas., Max A. Conrad, Burlington, Iowa.

(*Continued on page* 183)



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Municipal and Civic Publications

A Booklet for Councilmen

A Councilman Speaks—*By Arthur W. Bromage. Published by the George Wahr Publishing Co., Ann Arbor, Mich.* 1951. 81. *pp.*

This booklet is a sequel to "On the City Council," written by the same author, concerning his experiences as freshman on the Ann Arbor City Council. The present effort explains the councilman's view of municipal politics and administration. The thoughtful, well-written comments about the nature of the councilman's job take on additional value and meaning when coupled with the fact that the author is a professor of political science at the University of Michigan. The scanty literature about city councilmen, their importance, and how they operate is greatly enriched through publication of this booklet and its predecessor.

Plant Protection Reports

Sabotage and Plant Protection—*Chamber of Commerce of U. S., Washington, D. C. May* 1951. 25 *pp.* 50 *cents.*

Necessary steps to be taken by industry and defense officials for combating sabotage are set forth by civilian and military experts in this publication which combines addresses on the subject from a special session at the annual meeting of the Chamber of Commerce.

Cost of Driving to Work

The Cost of Driving to Work in San Francisco—*Special Report, Planning Advisory Service, American Society of Planning Officials,* 1313 *E. 60th St., Chicago* 37, *Ill. July* 1951. 11 *pp. Reprinted from* Planning Monograph *No. 9, San Francisco Department of City Planning.*

This carefully evolved report concludes that although the cheapest way to travel to work is by public transit, at savings of $30, $40, and even $50 each month, less than half the citizens of San Francisco today use public transit to get to work. Of public concern is the fact that the higher cost to the individual of driving to work is balanced by a comparatively higher cost to the city—a higher cost in insoluble congestion, in providing expressways, freeways, and parking facilities, and in subsidizing the transit system.

Negro Housing in Miami

Negro Housing in the Miami Area, Effects of the Post-War Building Boom—*By Reinhold P. Wolff and David K. Gillegly. Bureau of Business and Economic Research, University of Miami, Coral Gables* 46, *Fla.* 1951. 22 *pp.* $1.

A realistic appraisal of Negro housing problems in the Miami area. The report concludes with these four recommendations: communities and municipal subdivisions of Dade County must recognize the responsibility of supplying Negro-housing areas with satisfactory municipal services; building programs of private builders should be scrutinized more closely to assure higher standards of construction; there is great need for education of the colored population in both housing and budgeting of expenses; communities cannot escape the responsibility of taking care of the housing needs of Negroes whose economic instability excludes them from high-standard housing projects.

New York Commuting Trends

New York's Commuters, Trends of Commuter Transportation in the New York Metropolitan Region, 1930-1950—*Regional Plan Association, Inc.,* 205 *E. 42nd St., New York* 17, *N. Y.* 12 *pp.* $2.

An excellent report analyzing rail-commuter problems, whose techniques of analysis and presentation should be of considerable value in other large metropolitan areas.

Highway Design and Construction Text

Highway Design and Construction—*By Arthur G. Bruce and John Clarkeson. International Text Book Co., Scranton, Pa. Third Edition.* 734 *pp.* $7.25.

A conventional text on the design, construction, and location of highways. To the municipal official, it holds the same fault that so many texts on this subject hold. It devotes only cursory discussion to the problems in urban areas where more than half the nation's traffic is concentrated. It is reluctant to consider any more than an experiment the growing practice of doing away with the so-called expansion joints and substituting for them the closely spaced warping joint without the use of a load-transfer device. The chapter on traffic studies should be helpful.

British Water Supply Manual

Manual of British Water Supply Practice—*Compiled by the Institution of Water Engineers. Aubrey Thomas Hobbs, editor. W. Heffer and Sons Ltd., Cambridge, England.* 893 *pp.* 50 *shillings net.*

One of the most delightful books on water supply that has been published in recent years. The book, of course, is designed for the assistance of British water officials and makes no attempt to reconcile them with the practices followed in this country. Yet its descriptions are informative and helpful. In particular, the straightforward, simple analysis of pumps and their applications contrasts strongly with the redundant mystery that characterizes so many texts on this subject that are available to engineers in the United States. This book should be a part of every water-works engineer's library.

Mechanics and Material Strength

Simplified Mechanics and Strength of Materials—*By Harry Parker. John Wiley & Sons, Inc., New York* 16, *N. Y.* 269 *pp.* $4.

A theoretical text, useful to the practicing engineer who likes to keep refreshed in the analytical portion of his practice. The book, which appears designed primarily for classroom study, has a number of exercise-problems listed at the end of each chapter.

Land and Water Use

Water, Land, and People—*By Bernard Frank and Anthony Netboy. Alfred A. Knopf, New York* 22, *N. Y.* 330 *pp.*

A dramatically written book that attempts to show how many human ills and difficulties can be laid at the door of improper use of our water resources. The book should be a valuable text to anyone who is a member of a policy-making committee or group that has as one of its responsibilities land and water use.

Proceedings of Planning Conference

Proceedings, *Joint Conference, American Institute of Planners and Canadian Institute of Professional Town Planners, March* 1950—*Available from American Institute of Planners,* 77 *Massachusetts Ave., Cambridge* 39, *Mass.* 34 *pp.*

Among the lively subjects discussed at this joint meeting of American and Canadian planners were: "The Consultant and the City Plan—How May His Services Best Be Applied?", "The Increasing Social Responsibility of the City Planner," "Techniques of New Town Design," "New Trends in Housing and Redevelopment Legislation," and a report on the establishment of the Bi-State Development Agency in St. Louis.

Labor Problems in the Public Service

The Labor Problem in the Public Service—*By Morton Godine. Harvard University Press, Cambridge* 38, *Mass.* 1951. 305 *pp.* $5.

This timely volume points to the need for a forthright program of labor relations in public employment directed toward the mitigation of the causes rather than the mere suppression of the symptoms of staff dissatisfaction. The author traces the history of government-employee organization, which has been marked by a slow transition from official hostility or indifference through a reluctant acceptance of legislative pressuring by civil-service unions to significant experimentations with genuine collective bargaining in several agencies.

The book discusses in detail the current status of unionism in the government service, the strike problem in public employment, and the individual and collective participation of civil servants in political activities. The author proposes principles and methods of group consultation appropriate to a responsible and representative bureaucracy.

The volume is recommended reading for all top municipal administrators concerned with problems of employee organization; it should be of great aid in helping to formulate permanent policy.

Home Rule in Texas

City and County Home Rule in Texas—*By John P. Keith. Institute of Public Affairs, University of Texas, Austin, Texas.* 1951. 176 *pp.* $2.

An exceptionally competent investigation of the practice of home rule by local governments in Texas. The report analyzes the home rule provision in the Texas constitution in the attempt to answer whether a need for constitutional revision is indicated. It carefully traces the powers of home rule cities as determined in numerous court cases.

The study concludes with the statement that home rule is a matter of attitude; it cannot be achieved entirely by mandate of ink on paper or by the adoption of legalistic ritual. The populace must understand the necessity for home rule to deter the legislature from undue interference with local affairs, stimulate local officials to fulfill their obligations under home rule, and encourage the courts' present trend of legal thinking in favor of greater local autonomy.

Local Health Departments—A Policy Statement

The Local Health Department, Services and Responsibilities—*National Advisory Committee on Local Health Units, National Health Council,* 1790 *Broadway, New York* 19, *N. Y.* 1951. 6 *pp.*

This reprint from the *American Journal of Public Health,* an official policy statement of the American Public Health Association, summarizes as completely and concisely as possible those services and responsibilities which can be incorporated into efficiently organized and adequately staffed full-time local health departments.

Public Relations for a Charter Commission

Good Public Relations—the Key to the Charter Victory in Philadelphia—*By Charlton F. Chute. Available from Government Public Relations Association,* 341 *Madison Ave., New York* 17, *N. Y. June* 1951. 27 *pp.*

An address delivered before the Government Public Relations Association in June which traces the comprehensive public relations program and campaign that produced overwhelming voter approval of a new city charter for Philadelphia. The author served as consultant to the Philadelphia Charter Commission.

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Forms of Municipal Government

FORMS OF MUNICIPAL GOVERNMENT, HOW HAVE THEY WORKED? *National Municipal League, 299 Broadway, New York 7, N. Y.* 1951. 20 *pp.* 25 *cents.*

A brief review of the forms of municipal government in the United States, written in language directed to the layman. It shows that since 1917 the percentage of cities adopting the manager plan has been 28, while the decrease of the mayor-council plan has been 15% and the commission plan 13%. Now, in 1951, 40% of American cities with populations of over 30,000 have the mayor-council form of government, 25% have the commission form, and 33% have the council-manager form.

Swedish Planning and Housing

SWEDEN BUILDS—*By G. E. Kidder Smith. Boniers, Inc., 605 Madison Avenue, New York 22, N. Y. October* 1950. 633 *photographs,* 7 *color plates.* 280 *pp.* $8.50.

This is a handsome and lavishly illustrated book by one of the world's finest architectural photographers. It discusses Swedish housing and city-planning policy, including an introductory chapter on Swedish land policy by Sven Markelius. It presents photographs of the Stockholm park system, schools, hospitals, bridges, concert halls, museums, public buildings, and housing projects of every description—enough to indicate clearly why it is that contemporary Swedish architecture has so impressed everyone who has seen it.

However, the author does not hesitate to criticize when he thinks this is necessary. For example, he believes that recently there has arisen danger of the dull, dead hand of unimaginative officialdom being laid on architecture, with too much forbidding, too much bureaucracy—leading to architectural mediocrity. But certainly planners, architects, housing authorities, students, and others will find the examples shown in the book stimulating and rewarding as progressive examples of modern building trends.

Observations on Government

A CITIZEN THINKS OF HIS GOVERNMENT—*By Charles G. Morris. Dorrance & Company, Philadelphia, Pa.* 1950. 220 *pp.* $2.50.

The author, a lawyer, industrialist, leader in trade and civic circles, and especially active in civil-service reform, has here collected some of his papers and speeches on the general subject of political economy. The book contains both pungent and thoughtful observations on governmental affairs—national, state, and local. It makes good reading for any public official.

Ideas for Landscaping

LANDSCAPE ARCHITECTURE—*By the Department of Landscape Architecture, Graduate School of Design, Harvard University, Cambridge, Mass.* 1951. 76 *pp.* $2.

In celebration of the completion of its first fifty years, the Department of Landscape Architecture of Harvard University held a landscape architecture exhibition at Robinson Hall, from which the material here published was selected. It comprises designs and pictures of attractive modern gardens, parks, parkways, and other outdoor shrub plantings, as well as several essays on landscape architecture.

Manuals for Boards

THE BOARD MEMBERS' MANUAL—HOW TO PRODUCE AND USE IT IN BOARD EDUCATION—*By Charlotte K. Demorest, National Publicity Council for Health and Welfare Services, Inc., 257 4th Ave., New York 10, N. Y.* 1951. 28 *pp.* $1.

The questions and recommendations in this report have wide applicability, and should prove useful to board members for almost any agency or institution serving a public function. Board member manuals can serve many functions in gathering together in one place basic information about an agency, in serving as a textbook for new board members, in recalling facts that have been forgotten, and in aiding intelligent discussion leading to sound policy decisions.

Effective Supervision of Personnel

THE SUPERVISION OF PERSONNEL, HUMAN RELATIONS IN THE MANAGEMENT OF MEN—*By John M. Pfiffner. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y.* 1951. 454 *pp.* $5.

Aimed primarily at improved leadership in line supervision, this book deals with the human problems of administration and management. It adopts fundamentally a "why" rather than a "how" approach. Emphasis is on the social and psychological aspects of leadership at operating levels.

The book helps to explain the reasons for men's behavior in everyday management situations, and provides employers and supervisors with concrete facts to use as a basis for maintaining successful face-to-face dealings with troubled employees. The last third of the book is based upon the proposition that troubled workers should be treated as individuals, and that line supervisors should be conditioned to accept responsibility for as much of this job as intelligent laymen can be expected to perform.

Techniques are described for the selection and training of supervisors which numerous local officials should find especially useful and practical.

Handbook for Housing Commissioners

HANDBOOK FOR HOUSING COMMISSIONERS—*National Association of Housing Officials,* 1313 *E. 60th St., Chicago 37, Ill. Dec.* 1950. 102 *pp.* $2.

A handy, concise book which provides useful background material valuable for all newly appointed housing commissioners. Much of the book may also be of interest to community-minded citizens. The main chapters are: "Housing History," "What Is a Local Housing Authority?" "The Commissioner's Decisions," and "The Commissioner and His Relationship to the Public." Excellent brief reading lists are included at the end of each chapter. The book is cased in an attractive cardboard folder, so that related material can easily be accumulated and kept together.

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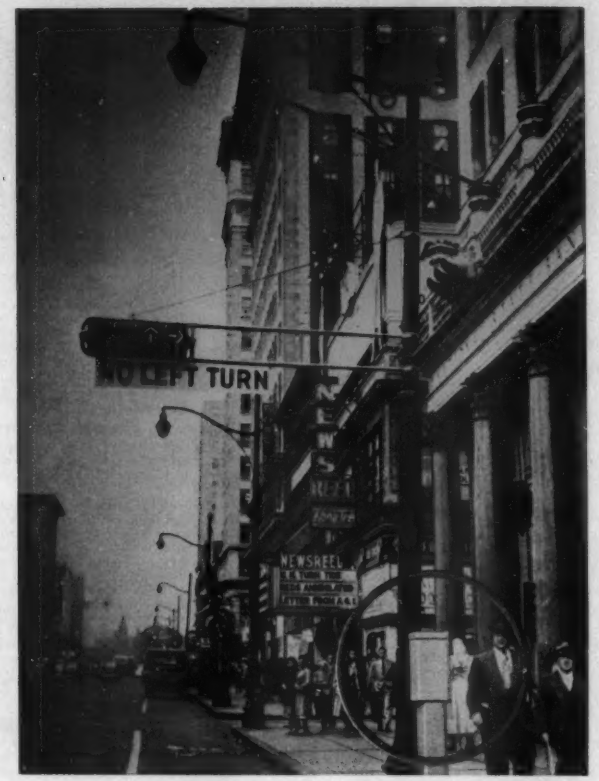

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Roadside Development Papers

TENTH SHORT COURSE ON ROADSIDE DEVELOPMENT—*Department of Landscape Architecture, Ohio State University and Ohio Department of Highways, Columbus.* 1951. 186 *pp. For copies of report address Wilbur J. Garmhausen, Chief Landscape Architect, Ohio Department of Highways, Columbus* 15.

Among the many useful and informative papers presented in this report are: "Advancement in Erosion Control Protection by Seeding and Mulching," "Woody Plants," "Ground Covers," "Chemicals and Equipment for Chemical Weed Control," "Roadside Development as it Affects Maintenance on New Construction," "Intersection Design," etc.

Planning and Housing Reports

BALTIMORE COUNTY, MD. — Population Data. Baltimore County Planning Commission, Towson, Md. May 1951. Mimeo. Tables. Maps. 12 pp.

CHICAGO, ILL.—Report for 1950. An illustrated account of the redevelopment operations of The Chicago Land Clearance Commission.

DAYTON, OHIO—Planning in Dayton. A Summary of 1950 Planning Activities in Dayton. The Dayton City Plan Board, 530 Municipal Bldg. Illus. Tables. 16 pp.

DETROIT, MICH. — Industrial Decentralization, Detroit Region, 1940-1950. Prepared by Paul M. Reid, Planning Analyst, for the Detroit Metropolitan Area Regional Planning Commission, 1002 Cadillac Square Bldg., Detroit 26. June 1951. Mimeo. Tables. Maps. Graphs. 29 pp.

JEFFERSON COUNTY, KY.—Study of Land Uses in Jefferson County. Louisville and Jefferson County Planning and Zoning Commission, 302 Fiscal Court Bldg., Louisville 2. Bulletin No. 2. April 1951. Maps. Graphs. Unpaged.

KANSAS CITY, MO.—Locational Costs in Industrial Districts of Greater Kansas City. City Plan Commission, Nov. 1950. Tables. Maps. 83 pp. $2.

LONG BEACH, CALIF.—Planning Progress, January 1949-December 1950. The City Planning Commission, 209 City Hall, Long Beach 2. Illus. Maps. 45 pp.

LOUISVILLE, KY.—Public Services and Blighted Areas. A Study of Two Areas in Louisville. A joint report of the Louisville and Jefferson County Planning and Zoning Commission and the City of Louisville Municipal Housing Commission. April 1951. Illus. Tables. Graphs. 41 pp.

MARQUETTE, MICH.—City Plan. Marquette Planning Board. 1951. Tables. Maps. 135 pp.

NEW JERSEY—Proceedings of the New Jersey State Conference on Planning and Development, April 18, 1951. Prepared by the Planning Section of the New Jersey Department of Conservation and Economic Development, 520 E. State St., Trenton 7. Mimeo. 110 pp.

OAKLAND, CALIF. — Annual Report, 1950-1951. City Planning Commission, City Hall, Oakland. July 1951. Mimeo. Illus. 31 pp.

RICHMOND, VA.—A Comprehensive Plan of Major Streets, Transit and Transportation Facilities for the Richmond Area. Master Plan Study Project Staff, Richmond City Planning Commission, 217 Governor St., Richmond 19. Dec. 1950. Mimeo. Tables. Maps. 83 pp.

WATROUS, SASK.—Report on Community Planning for the Town of Watrous. Community Planning Branch, Department of Municipal Affairs, Regina, Sask. March 1951. Mimeo. Tables. Map. 9 pp.

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ALLEGHENY COUNTY, PA. — Allegheny County Bureau of Smoke Control Second Annual Report of activities for the Year Ending June 1, 1951. Allegheny County Bureau of Smoke Control, 325 County Office Bldg., Pittsburgh 19. July 1, 1951. Mimeo. Illus. Tables. Charts. 79 pp.

ATLANTA, GA.—Facts and Figures About Atlanta. Compiled by The Industrial Bureau, Atlanta Chamber of Commerce, Atlanta. 1951. Illus. Tables. Graphs. 40 pp.

DES MOINES, IOWA—Annual Report of the City Manager. 1950. Illus. Graphs. 56 pp.

GARY, IND.—Tenth Annual Report on the Sewage Treatment Works for 1950. Gary Sanitary District, Gary, Ind. Mimeo. Tables. 56 pp.

HOLLAND, MICH.—Fifty-Seventh Annual Report of the Board of Public Works of the City of Holland, Mich., for the Year Ending December 31, 1950. Tables. Graphs. 56 pp.

INGLEWOOD, CALIF.—You and Your Job with the City of Inglewood. Prepared by William Stroschein, Staff Assistant. 1951. 28 pp.

IRVINGTON, N. J.—Annual Report of the Municipal Accounts of the Town of Irvington for the Year Ending December 31, 1951. Tables. Graphs. 97 pp.

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LOS ANGELES, CALIF.—Accomplishments of the City Planning Commission, 1950. Illus. Graphs. Maps. 48 pp.

LOUISIANA—Special Districts in Louisiana. By Emmett Asseff, Assistant Professor of Government at Louisiana State University. Bureau of Government Research, Louisiana State University, Baton Rouge. 1951. 98 pp.

MASON CITY, IOWA — Annual Report to the People. Mayor-Council Government Statement for Fiscal Year Ending March 31, 1951. Mason City *Globe-Gazette*, July 27, 1951, Section 2. Illus. Tables. 12 pp.

MICHIGAN — Property Tax Administration in Michigan. By Claude R. Tharp, Bureau of Government, Institute of Public Administration, University of Michigan. Michigan Pamphlets No. 22. 1951. 33 pp. 50 cents.

MONTREAL, CANADA—The Montreal Metropolitan Commission Financial Statement and Assessments for Year Ended December 31,

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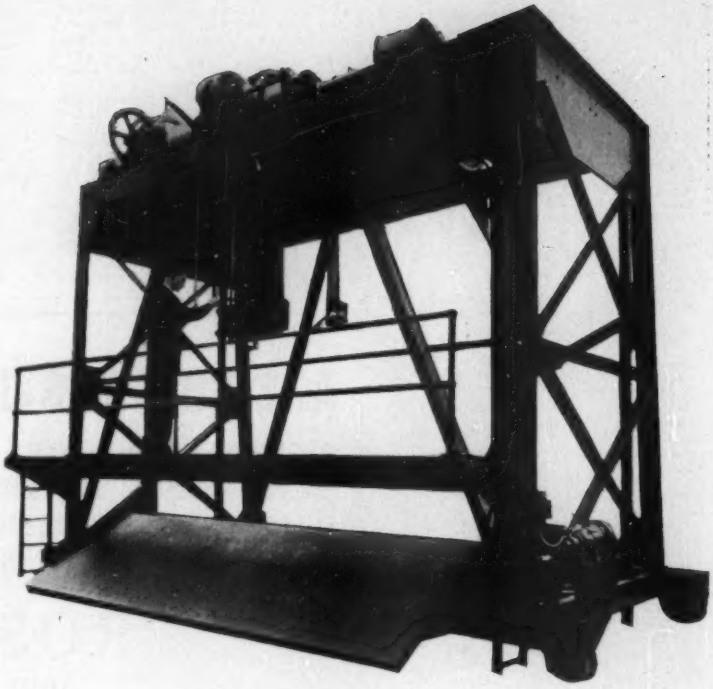

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1950. The Montreal Metropolitan Commission, 10 Ouest, Rue St. Jacques, Montreal. 15 pp.

NEW ROCHELLE, N. Y.—Auditor's Annual Report, 1950. Tables. 127 pp.

NEW YORK—First Annual Report of the New York State Thruway Authority. New York State Thruway Authority, 119 Washington Ave., Albany 6. January 31, 1951. 39 pp.

PENNSYLVANIA—The Independence Mall. A Report of the Joint State Government Commission to the General Assembly of the Commonwealth of Pennsylvania. Joint State Government Commission, Capitol Bldg., Harrisburg. Session of 1951. Illus. Graphs. 18 pp.

PHILADELPHIA, PA.—Report from the Mayor to the Citizens of Philadelphia, 1950. Illus. Graphs. Maps. 72 pp.

——Relationship of Price and Assessed Value of Real Estate Sold in Philadelphia, 1943-1950. Philadelphia City Planning Commission. Public Information Bulletin No. 3-b. May 1951. Tables. Graphs. Unpaged.

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——Television and FM Antennas. By Charles L. Smith. National Fire Protection Assn., 60 Batterymarch St., Boston 10, Mass. 14 pp. 25 cents. Discounts for quantities.

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——The Need for Industrial Dispersal. Materials prepared for this Joint Committee on the Economic Report by the Committee Staff. 1951. Available from the U. S. Gov't Printing Office, Washington 25. 56 pp.

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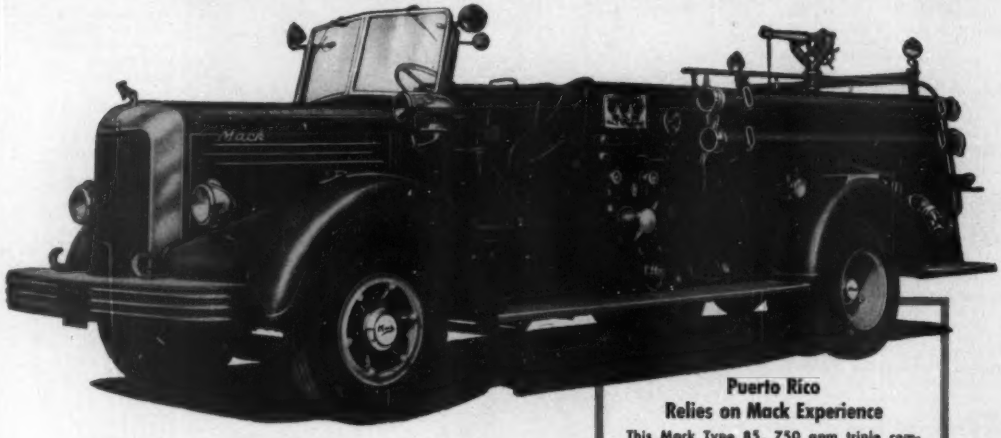

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Norwich City and Town Consolidate Under Council-Manager Charter

THE population of the city of Norwich, Conn., increased on July 18, 1951, from 23,231 persons to 37,571 persons. In a local referendum held on that date, over 51% of the 19,252 voters of the town and city voted on consolidation of the two. Of the votes cast, 5,612 were affirmative and 4,277 were against consolidation.

At another referendum on August 1—just two weeks after the vote for consolidation—8,138 voters went to the polls, slightly less than for the consolidation referendum, and changed the charter of the city from the strong-mayor form to the council-manager form of government. Of the votes cast, 6,143 were for council-manager, and 1,995 were for the mayor form.

These referenda ended a struggle of nearly half a century during which proponents of consolidation were repeatedly repelled by opponents—in state legislature as well as within town and city.

The consolidation effort was intensified in 1946 when the Committee for Better Government for Norwich began work on the draft for a new charter. After a failure to secure legislative action in 1949, the committee spent two more years strenuously working for its cause, and in the 1951 session of the legislature the referendum on consolidation was authorized, and if affirmative, the voters were to go to the polls two weeks later to choose the form of government for the new city.

With its enlarged area and population, Norwich now joins the many other progressive municipalities in the United States that have adopted the council-manager form of government. The new charter will go into effect January 1, 1952.

Springfield Industry and Wittenberg College Launch Cooperative Program

IN Springfield, Ohio, business and industry are uniting this fall with a local educational institution—Wittenberg College—in launching a $125,000 program to help the community's supervisory-level personnel become more effective on their jobs. The Chamber of Commerce is cooperating on the program through its business-industry mobilization council. The project will be financed by participating industries.

Programs of this type can be especially valuable at this time, it is pointed out, because inflation has left most of the nation's small, independent colleges in desperate need of increased income, and rapid expansion has compelled many industries to up-grade personnel without background training.

Emphasizing "learn as you earn," the program calls for foremen and other supervisory-level employees of industry to receive one-week leaves from their jobs to go to college. The men will spend 40 hours on special work in human relations, personal development, economics, and company operations during their week at Wittenberg.

At least 800 men are expected to benefit from the program the first year. The supervisors will receive their regular salaries, totaling about $100,000, while in class. The cooperating companies will also pay the men's tuition of about $25,000 at the college.

The program will start in September and continue for 29 weeks, with 25 to 30 supervisors attending classes each week.

Human relations will occupy nearly one-third of the supervisors' time during the week, with special attention paid to such phases as human behavior, how people learn, and human relations in the community. Eight hours will be given to personal development with emphasis on personal qualities of a supervisor, planning and organizing, everyday speaking, and everyday writing.

Company operations will be viewed from such aspects as general organizational structure and product distribution. In the sessions on economics, the men will study and discuss the American business system, accomplishments of the system, individual freedoms under the system, etc.

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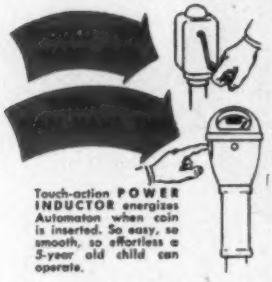

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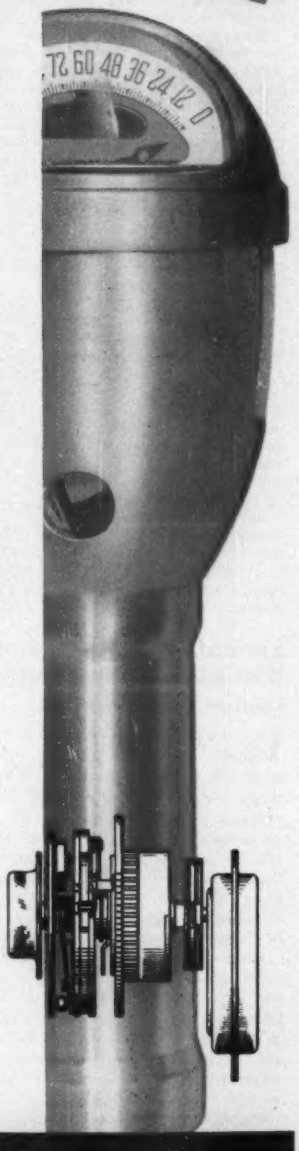

835 NORTH WOOD ST. **DUNCAN PARKING METER CORP.** CHICAGO 22, ILL.

Manufacturers of AUTOMATON fully automatic and MILLER manual parking meters.

$4,000 Per Capita Estimated Value Of Urban Facilities

BASED on the value of today's dollar, the cost of replacing all facilities, both public and private, for living and working in an urban community is estimated at $4,000 per capita by A. E. K. Bunnell, consultant of the Community Planning Branch of the Department of Planning and Development of the Province of Ontario.

Presenting this estimate at a seminar on Town Planning Problems during the 1951 conference of the Canadian Federation of Mayors and Municipalities, Mr. Bunnell continued:

Is it too much to expect that the Dominion of Canada will grow by 5 millions of people in the next 25 years? If so, then let us reflect for a moment what that means in urban development, for most of these people will be of urban skills and occupations. It means four cities the size of Montreal, or five the size of Toronto, or ten the size of Vancouver, or twenty the size of Hamilton, or fifty the size of Regina—and that means, gentlemen, that on the basis of my estimate of $4,000 per capita, a capital investment on the part of individuals and the public of 20 *billion* dollars.

The growth that I have envisioned means new factories, new homes, new schools, new religious centres, new streets, new highways, new railway lines, new airports, new water facilities, new power facilities, new sewer facilities, new park and recreational facilities, new boulevards, new parking areas for motor vehicles, new transportation facilities, and many others. It will also mean the removal and relocation of many existing facilities and buildings for which large additional sums will be required.

Does such an investment warrant municipal authorities in authorizing the expenditure of a small amount of the taxpayers' money to plan a sound physical base for the construction and development of these facilities? My own answer is an unqualified "Yes."

A copy of Mr. Bunnell's paper (9 mimeographed pages) may be had without charge by addressing him at 980 Bay St., Toronto 5, Ont.

Billboard Advertising and Highway Safety

To the Editor of THE AMERICAN CITY:

The *Washington Evening Star* of June 14, 1951, reports an incident at the meeting of the President's Highway Safety Conference which may have escaped the attention of your readers.

The account in the *Star* tells how a panel group of the conference "rebuffed a maneuver to indorse billboard advertising." The Committee on Public Information was discussing a resolution urging extension of the use of technically trained highway engineers, and a prominent representative of the Outdoor Advertising Association of America suggested the addition of a qualifying phrase calling for "due regard for the rights of private property and the constitutions of the United States and of the several States."

Well, of course, most people are in favor of property rights and even of the federal and state constitutions; but when you attach that recognition to a resolution *as a qualification thereof*, it takes on special and additional meaning.

What was the billboard man's purpose?

Observers said that his position was that a person owning property along a highway should be permitted to get revenue from it through outdoor advertising, if he desires.

Thereupon the panel turned the amendment down, the billboard man casting the only vote for the benefit of his own private pocket. And so the panel "rebuffed the maneuver."

This action seems to represent a forward step for the National Safety Council since November 1948, when that organization was induced to make an illogical award to the Outdoor Advertising Association recognizing its "service to safety" by erecting billboards with safety messages to drivers thereon. Outside of billboard circles billboards are universally admitted to be dangerous because they are erected in order to attract attention from the road.

ALBERT S. BARD
Counsel to National Roadside Council

How States Rank in Population Density

RHODE ISLAND, New Jersey, and Massachusetts, in that order, rank as the three most densely populated states

PEERLESS DIRECT—
REFUELING AND TRANSFER PUMP FOR AVIATION GASOLINE

This approved modification of the famous Peerless close-coupled deep well turbine pump has complete acceptance amongst government and military officials and engineers for transferring and pumping of petroleum products at airports and airfields. Its operation is characterized by unfailing dependability and exceptionally long service life.
Write for Peerless Bulletin No. B-2522 and sample specifications. This detailed and descriptive information will save your community time and money in planning approved type gasoline and fuel oil pump installations.

CHARACTERISTICS AT A GLANCE

HEADS:	from 20 to 300 feet
CAPACITY:	30 to 1500 gpm
HP RANGE:	2 to 75 hp
DRIVES:	As required; standard, vertical, electric hollowshaft explosion-proof motor; right angle gear drive for use with stationary engines
LUBRICATION:	Open line shaft construction; non-metallic bearings, lubricated by liquid being pumped. No priming problems

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Address inquiries to Factories at:
Los Angeles 31, California and Indianapolis 8, Indiana
Offices: New York, Chicago, St. Louis, Atlanta; Dallas, Plainview and Lubbock, Texas; Fresno, Los Angeles; Phoenix; Albuquerque, New Mex.

Plan your air raid warning system *now!*

Remember these basic facts:

Horsepower is no true measure of sound output

Decibel output is no true measure of effective sound distribution

A successful air raid system is not that which has the most powerful warning device nor yet the one which produces the greatest decibel output at 100 feet or other specific distance.

The effective air raid system is one which blankets every area completely with ample and unmistakable penetrating sound waves.

Centrally located large signals simply cannot do this because buildings, trees, hills, and other obstacles block off, deflect, or reflect the sound waves. Wind, humidity, altitude and temperature all conspire to alter the distribution of sound.

"Super" signals may produce 100 times the volume of a small signal. By simple arithmetic it should cover 100 times the area. The truth is that sound distribution functions by higher mathematics, not arithmetic. Simple arithmetic doesn't take into consideration the obstacles to sound travel encountered in congested municipalities where air raid sirens are needed and used.

The more congested the area, the more signal devices required to blanket it, regardless of size. Ponderous, oversize devices cost infinitely more for blanket coverage per square mile than smaller signals. In extremely congested areas, it takes almost as many "whooper-doopers" to assure blanket coverage as it would smaller sirens.

Dollar for dollar, 2, 5, or 7½ horsepower sirens will do the job better and more dependably. Cities which used the giant models in World War II have turned to smaller sirens in this emergency. Philadelphia, Newark, New Orleans, Hartford, Providence, El Paso, and Buffalo have had or are now installing the finest air raid systems. Draw on their wisdom and experience. We will be glad to give you honest and sincere assistance with your air raid signal problem. Write us and ask for Bulletin No. 95.

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in the nation, according to a Department of Commerce release of July 8.

The accompanying table gives, for each of the 48 states, the land area in square miles, the 1950 population, and the population per square mile; also the population density of the nation's largest cities.

State	Land Area Sq. Miles	Population in 1950	Population Per Sq. Mi.
UNITED STATES	2,974,725	150,697,361	50.7
Alabama	51,078	3,061,743	59.9
Arizona	113,575	749,587	6.6
Arkansas	52,073	1,909,511	36.3
California	156,740	10,588,223	67.5
Colorado	103,922	1,325,089	12.8
Connecticut	4,899	2,007,280	409.7
Delaware	1,978	318,085	160.8
Dist. of Columbia	61	802,178	13,150.5
Florida	54,262	2,771,305	51.1
Georgia	58,483	3,444,578	58.9
Idaho	82,769	588,637	7.1
Illinois	55,933	8,712,176	155.8
Indiana	36,205	3,934,224	108.7
Iowa	56,045	2,621,073	46.8
Kansas	82,108	1,905,299	23.2
Kentucky	39,864	2,944,806	73.9
Louisiana	45,162	2,683,516	59.4
Maine	31,040	913,774	29.4
Maryland	9,891	2,343,001	237.1
Massachusetts	7,867	4,690,514	596.2
Michigan	57,022	6,371,766	111.7
Minnesota	80,009	2,982,483	37.3
Mississippi	47,248	2,178,914	46.1
Missouri	69,226	3,954,653	57.1
Montana	145,878	591,024	4.1
Nebraska	76,663	1,325,510	17.3
Nevada	109,789	160,083	1.5
New Hampshire	9,017	533,242	59.1
New Jersey	7,522	4,835,329	642.8
New Mexico	121,511	681,187	5.6
New York	47,944	14,830,192	309.3
North Carolina	49,097	4,061,929	82.7
North Dakota	70,057	619,636	8.8
Ohio	41,000	7,946,627	193.8
Oklahoma	69,031	2,233,351	32.4
Oregon	96,213	1,521,341	15.8
Pennsylvania	45,045	10,498,012	233.1
Rhode Island	1,027	791,896	748.2
South Carolina	30,305	2,117,027	69.9
South Dakota	76,536	652,740	8.5
Tennessee	41,797	3,291,718	78.8
Texas	262,313	7,711,194	29.3
Utah	82,346	688,862	8.4
Vermont	9,278	377,747	40.7
Virginia	39,893	3,318,680	83.2
Washington	66,786	2,378,963	35.6
West Virginia	24,080	2,005,552	83.3
Wisconsin	54,909	3,434,575	62.8
Wyoming	97,506	290,529	3.0

City	Land Area Sq. Miles	Population Total 1950	Population Per Sq. Mi.
New York City	314	7,835,099	24,930
Bronx Borough	43	1,446,905	33,620
Brooklyn Borough	76	2,718,347	35,740
Manhattan Borough	22	1,936,540	88,025
Queens Borough	113	1,560,594	13,689
Richmond Borough	60	191,013	3,185
Chicago	208	3,606,436	17,339
Philadelphia	127	2,071,605	16,310
Los Angeles	450	1,937,692	4,350
Detroit	138	1,836,317	13,320
Baltimore	79	940,205	11,900
Cleveland	75	905,636	12,079
St. Louis	61	852,623	13,975
Washington	61	802,178	13,150
Boston	46	791,853	17,190

International Federation For Housing and Town Planning

THE Eighth Meeting of the Council of the International Federation for Housing and Town Planning, held at Hoddesdon, about 25 miles from London, July 14-18, brought together approximately 75 representatives of constituent organizations of the Federation from fourteen countries, including Australia, Union of South Africa, and Indonesia, as well as those of Western Europe. Participants from the U. S. A. were Miss Harlean James of Washington, D. C.; Martin Meyerson of Chicago, and Charles S. Ascher, who sat for Walter H. Blucher in the Thirteenth Meeting of the Bureau and the Seventh Meeting of the Executive Committee.

The Secretary-General, H. van der Weijde, reported that the headquarters had now been transferred to The Hague, in temporary quarters provided by the city at Bezuidenhoutseweg 75, pending completion in January 1952 of the addition to the building of the International Union of Local Authorities at Palaisstraat 5, in which the two organizations will again be united, as they were at Brussels before the war.

Louis Scheffner, City Planner for Amsterdam, was elected Deputy President, a newly created office; Charles Pranard, President of the French Confederation for Housing and Urbanism, was elected Honorary Secretary to succeed Lady E. E. Pepler, who had served for many years. F. J. Osborn of Welwyn Garden City was re-elected Honorary Treasurer. Hans Quiding of the Royal Building Board of Sweden, was elected to the Bureau.

The Council decided that the next Congress of the Federation should take place September 7-13, 1952. Although both Vienna and Lisbon have issued invitations, the final selection of a meeting place is to be made by the Bureau at its meeting in The Hague on October 19, 1951. Topics proposed for study and discussion include Urban Land Policies; Housing in Tropical Countries (a problem of great concern in underdeveloped countries); Public Control of Private Development, and the Measurement of Substandardness of Housing. Plans were initiated for a possible regional conference in South East Asia in 1953, to extend the influence of the Federation to new areas.

The thin coating of cement, mechanically applied and troweled by the Centriline process, raises the pH of any moisture entrapped within the lining to a non-corrosive level—thus prohibiting *corrosion or tuberculation.* Centrilining also seals holes caused by external corrosion, increases the pipe's carrying capacity thereby reducing pumping and maintenance costs.

Over 1,000 feet of pipe a day can be Centrilined while *the pipe remains in the ground!* This process—utilizing centrifugal force in applying cement—will give new life to your old pipelines at a fraction of the cost of installing new pipes.

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CEMENT MORTAR LININGS FOR PIPE IN PLACE

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...it gets into action immediately, then helps me get to the source of a fire quickly and safely. Keeps me comfortable and confident while I'm working under tough breathing conditions. And I sure like the supply of cool, refreshing *air* it gives me. It keeps me pepped up even when the going is rugged."

See your Scott distributor for FREE DEMONSTRATION of Scott *Air-Pak*, or write us *today* for full details.

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SCOTT AVIATION CORP.
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Canada: Safety Supply Co., Branches in all Principal Cities
Export: Southern Oxygen Co., 157 Chambers St., N. Y. 7, N. Y.

Elements of Street Construction and Maintenance

(*Continued from page* 93)

on the subgrade. When this has been carried down by percolating rainwater up to 2% of the subgrade volume in the layer in which frost action may be expected, frost heaving in most soils will be eliminated to temperatures as low as 15° F. The Purdue study indicates that this temperature rarely occurs under roads—and then only for a short time.[9]

The Purdue University studies disclosed further that frost boils can be controlled by mixing calcium chloride with the subgrade soil at the rate of 2% in silt, 1% in clay, and 0.5% in graded mixes. They also showed that frost heaving in surfaced areas can be corrected by drilling holes through the pavement and boring into the subgrade, backfilling with two parts of sand or pea gravel and one part calcium chloride.[8]

Salt for Stabilizing

R. W. McColough, Executive Assistant to the Minister of Highways and Public Works, Province of Nova Scotia, a part of North America where winter and spring thaws are a serious business, because of frost in clay subgrades, has in the past used 30 tons of salt under each mile of road with beneficial results. He notes that the salt not only prevents heaving, but tends to stabilize the gravel and clay subbase. The salt industry recommends 5 pounds of salt per square yard of subgrade area, harrowed into the soil.[5]

Next Month **— Concrete pavement design and construction — recommended thickness, placing of expansion and contraction joints, and proper curing procedures.**

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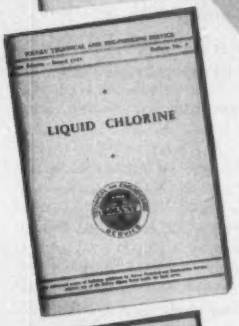
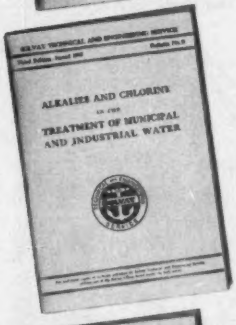
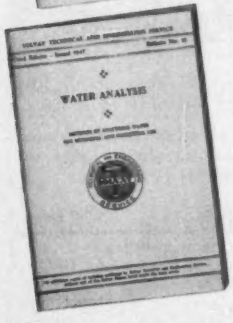
1. When By-Passes Do Not By-Pass, July 1949, p. 83.
2. Don't Make the Same Street Serve Two Masters, Dec. 1943, p. 13.
3. Street Design for Service, Feb. 1944, p. 52.
4. How Street Improvements Should Be Financed, Sept. 1948, p. 17.
5. Residential Street Design, Oct, 1947, p. 89.
6. Subdivision Control in a Small City, April 1950, p. 77.
7. Vibrating Roller Cuts Compaction Costs, Oct. 1948, p. 15.
8. Frost Boils and How to Treat Them, Oct. 1943, p. 11.
9. Preventing Frost Damage in City Streets, Jan. 1943, p. 11.

Let These Technical Bulletins Help Solve Your Water Problems







Any questions on water treatment? . . . on water analysis . . . or on the handling and storage of liquid chlorine? Let these authoritative Solvay Technical Bulletins help you. These bulletins are the result of long research and study and are available on request. There's no cost, no obligation on your part . . . simply fill in and mail the coupon below.

Also available to aid with your problems is Solvay Technical Service. The skilled technicians on this staff are trained in the methods and problems of applying chlorine and alkalies to water conditioning. Call on Solvay Technical Service at any time—there's no obligation. Your Solvay representative will give you full details.

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- ☐ Bulletin No. 8—Alkalies and Chlorine in the Treatment of Municipal and Industrial Water
- ☐ Bulletin No. 11—Water Analysis

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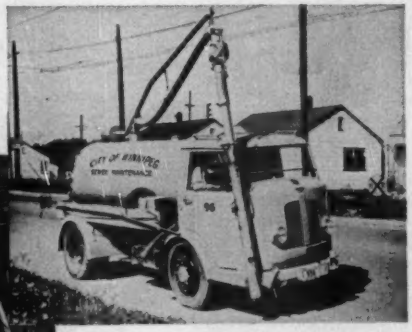
This Karrier Catch Basin Cleaner is used by Sanitary Engineering Company, N. Falmouth, Massachusetts for contract cesspool cleaning.

Any municipality that has sewer maintenance problems will agree that the Karrier Catch Basin Cleaner is the answer to their problem for these reasons:

1. Short wheel base for maneuverability; small turning circle.
2. Quiet and slow-running vacuum pump.
3. Hydraulic ram separates solids from dirty water thus increasing the effective capacity of the storage tank.
4. Subdivided tank with compartments for water and sludge.
5. Counterbalanced suction pipe swings to either side or to rear of vehicle.
6. Dirty water can be returned to sewer or used for flushing the next catch basin.
7. Hydraulic ram discharges load from door at the end of the tank when storage space is filled.

Another enthusiastic user of Karrier equipment for sewer maintenance is the City of Vancouver.



Top: For sewer maintenance the City of Winnipeg uses this equipment.

Left: City of Toronto is one of more than 750 municipalities using the Karrier Catch Basin Cleaner.

KARRIER

Catch Basin Cleaner vacuums the dirt out

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Planning Exhibit for ASPO Conference

FROM Plan to Reality" and "Control by the Comprehensive Guiding Plan" are the two dominant themes which will prevail for the comprehensive planning exhibit to be displayed during the National Planning Conference of the American Society of Planning Officials, October 14-17 at the William Penn Hotel, Pittsburgh.

Frederick Bigger, Chairman of the Pittsburgh Planning Commission, and Chairman of the Exhibits Commitee, for the conference has requested especially that communities enter exhibits that are devoid of complexities and are free of terms and symbols the public cannot readily understand.

Further information about the requirements of the Exhibits Committee may be obtained from Mr. Bigger at Suite 919, City-County Building, Pittsburgh, Pa.

Planning Schools Through Surveys

A GROWING trend toward reliance on comprehensive school-building surveys in the planning of expanded educational facilities is evident in many school systems throughout the country. In fact, local and state regulations have, in many instances, established the requirement that no future capital outlay will be made in school buildings except as their need has been fully determined on the basis of a comprehensive school-building survey. In such studies, the condition and future use of the existing plant are determined; the school curriculum is analyzed; population growth and trends are studied in their many ramifications; school-building requirements are prognosticated, and school sites, with due reference to the kinds of schools needed and desirable sizes, are recommended.

This school-survey work has become so important that, for the first time, an organization of trained and experienced educators and engineers is now available which devotes its entire time to this type of work.

Recent studies covering many aspects of school planning have been made in Roselle, N. J.; Groton, Conn.; Bridgewater, N. J., and the Tarrytowns, N. Y. Copies of these reports may be secured by writing to the survey organization—Engelhardt, Engelhardt and Leggett, 59 Park Ave., New York 16, N. Y.

States Speed Local School Building

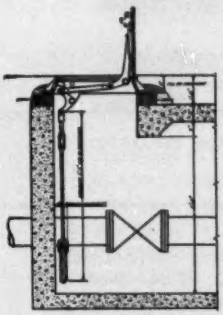
LOCAL school districts are getting an assist from their states in an effort to relieve the critical shortage of school buildings brought on by the booming wartime birth rate.

Taking a cue from Pennsylvania, several states have created special school-building authorities this year designed to help the local districts finance new buildings or to expand existing ones, according to the Council of State Governments. Among them are Georgia, Indiana, and Maine.

The Pennsylvania State Public School Building Authority was established in 1947 for the purpose of constructing, improving, maintaining, and operating school buildings and furnishing and equipping them for use. Establishment of the Authority was prompted by the fact that insufficient legal borrowing power remained to the local districts to finance the needed projects, and the state, due to a constitutional restriction, was not able to borrow and extend credit directly to the districts.

Already the Authority has entered into 82 contracts with school districts to lease, involving projects estimated to cost $37,000,000. Projects for which contracts to lease have been made are almost entirely for classroom buildings with some auxiliary facilities such as auditoriums and gymnasiums. More than half of the projects are those of joint districts.

Authorities set up this year by other states are generally similar to the Pennsylvania plan. Maine's school-building agency is empowered to issue bonds to be retired by rentals paid by the cities using the school-room space. A debt limit of $15,000,000 is set on the Authority. Georgia's Authority has as its goal the financing of $180,000,000 worth of improvements to the state's public school facilities.



● The Wachs Safety Counterbalanced Vault Cover can be opened with ease and safety by one man. To open, merely insert the combination Key-Handle, give it a half turn and open the cover with one hand. The counterbalance weights that make lifting the cover a one handed job also hold it in an upright, protective position while a man is below. Designed and manufactured to withstand the heaviest traffic, many of these units have given trouble free service for over 40 years under the most rugged conditions. Several leading utility companies have had them in use for this period of time.

Write today for descriptive literature showing dimensions, weights, construction, prices, etc.

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Solving Small-City Planning Problems

How Eastlake, Ohio, got maps faster and cheaper

Eastlake is a small, rapidly growing community located about 6½ miles east of Cleveland. Its growth problems are pointed up by the fact that it will be the site of a new $100,000,000 generating station.

Eastlake's Problem: Little field information was available to show present development or topography; drainage limits were not well defined. Sewerage facilities of the town were almost totally lacking; residents depended on septic tanks; surface water was discharged to a few small drains or to county drainage ditches.

What It Did: Eastlake contracted with Aero Service to make aerial photos and compile topographic maps for the entire area at a scale of 1 inch equals 200 feet, with a 2-foot contour interval. 90% of all points were to be accurate within one-half contour interval. Maps were also to show all existing streets, buildings and works of man, as well as water courses. The cost was $6.60 per acre.

Future Uses: The maps will be useful in planning other city improvements: transportation, water supply, selecting areas for residential and industrial developments, water main extensions, and related problems of city planning and growth.

Whatever Your Mapping Problems,

experienced AERO mappers can fulfill your requirements faster and cheaper. Dependable photo-mosaics, good for all general planning purposes, can be furnished for a few hundred to a few thousand dollars, depending on the city's size. Detailed aerial topographic maps can be produced at a fraction of the time and cost of ground surveys—*often ½ the cost of ground methods.*

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TOPOGRAPHIC MAPS • PLANIMETRIC MAPS
PRECISE AERIAL MOSAICS • AIRBORNE MAGNETOMETER SURVEYS
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· Bond Market

(*Continued from page* 138)

ing $171,319,000. Each issue was sold separately, but the time and conditions of sale were the same for all issues. Each issue was scheduled to mature in 40 annual installments (the period of the Annual Contributions Contract), beginning two years from the date of the bonds, and the security of the issues was identical. The offering was so large that there were only two bidding syndicates, each of which, however, included some 200 firms from all over the United States.

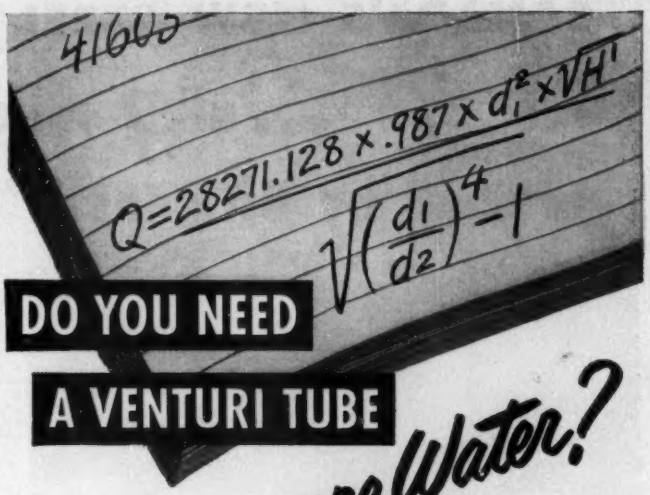
The municipal bond market at that time had just begun to show some hesitating improvement, after several months of rising interest rates. The *Bond Buyer's* index of the yield on 20 municipal bonds, which had reached 2.23% on June 21 (compared with 1.58% on February 1), had declined to 2.17% on July 12. There was some fear that the appearance in the market of so large an amount of bonds would choke off the rally and set off another period of rising interest rates.

The fear was unwarranted. The interest rates at which the bonds were sold—2% for $11,090,000 of them, 2⅛% for all the others—were perhaps higher than the PHA and the issuing authorities had anticipated, but they permitted the successful bidders ($155,739,000 bonds were bought by one syndicate, $15,580,000 by the other) to price the bonds attractively. Interestingly enough, the syndicate which bought the larger portion of the bonds offered them at four different price scales, despite their identical security. For the longest bonds, those maturing in 1992, the difference in yield amounted to 0.15%, with one group of bonds offered at prices to yield 2.10%, the second 2.15%, the third 2.20% and the fourth 2.25%. In part this difference was based on variations in tax status of the bonds among the several states, but for the most part was based on something far more intangible. The offering syndicate believed that some "names" would be more highly regarded by investors than others.

Sale a Complete Success

The offering was a complete success. The bonds were all sold within a very few days, and by the middle of August such of the bonds as re-appeared in the market were being offered at a lower yield. It is worth noting that the variation in yield between the different groups of "names" had pretty much evened out, with bonds of 1992 maturity being generally offered to yield around 2.10%. The improvement in the general market also continued, and as of August 9 the *Bond Buyer's* index had declined to 2.03%, compared with 2.17% just before the offering of the housing bonds.

The general plan for the remaining authorized housing financing calls for the offering of some $200,000,000 bonds at intervals of not less than 60 days, depending on construction progress (housing bonds are not sold until all contracts for the superstructure of the project have been let) and the condition of the market. The reception accorded the initial offering is a favorable augury of the success of the remaining financing.



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1. An 18'-6" diameter bronze main belt and a 12'-0" diameter bronze throat belt for use in a concrete Venturi Tube.

2. 72" diameter plate steel reverse flow Venturi Tube.

3. 96" diameter Venturi Tube with plate steel upstream and recovery sections, cast iron throat section.

4. A 60" diameter all bronze Venturi nozzle.

SIMPLEX makes Venturi tubes for measuring tremendous volumes of water flowing through large diameter pipelines. They include a variety of designs and sizes to suit specific conditions such as those relating to pressure, volume, and space limitations.

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SIMPLEX

VALVE AND METER COMPANY

CANADA'S NEW STEEL WATERLINE

. . . all 7 miles protected by Bitumastic® 70-B Enamel

NEW WATERLINE being laid at Hamilton, Ontario. Contract Department of By-Product Coke Company of Canada, Ltd., is cleaning, lining, coating and wrapping the pipe near the route of the pipe line.

THE 48-inch steel pipe pictured here is part of a 7-mile waterline being laid for the City of Hamilton, Ontario. The steel for the line and the Bitumastic 70-B Enamel were produced in Canada.

On this project, Koppers Canadian subsidiary, By-Product Coke Company of Canada, Ltd., set up a coating yard to line, coat and wrap the 32-foot lengths of pipe with Bitumastic 70-B Primer and Enamel. This yard is adjacent to the pipe-fabricating plant of Hamilton Bridge and Iron Company, Ltd.

The spun lining of Bitumastic 70-B Enamel on the inside of the pipe protects interior surfaces against corrosion and tuberculation. The 70-B Enamel also protects the outside of the pipe against pitting and leakage caused by soil corrosion.

Our Contract Department can handle *your* next water pipe-line project, too. One of our representatives will be glad to discuss the details with you.

Bitumastic Enamels soon available from Koppers new California Plant!

As soon as present construction work is completed, Koppers will be able to supply Bitumastic Enamels from a new plant at Fontana, California. The plant is being built to give you better service in the West.

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DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH AND WOODWARD, ALABAMA

Conventions—When and Where

(*Continued from page* 161)

Oct. 14-17—Fort Worth, Texas
AMERICAN WATER WORKS ASSOCIATION—Southwest Section. Annual Convention (Texas Hotel). Sec.-Treas., Leslie A. Jackson, Robinson Memorial Auditorium, Little Rock, Ark.

Oct. 14-17—Pittsburgh, Pa.
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Convention (Hotel William Penn). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

Oct. 14-17—San Francisco, Calif.
LEAGUE OF CALIFORNIA CITIES. Annual Convention. Exec. Dir., Richard Graves, Hotel Claremont Bldg., Berkeley 5, Calif.

Oct. 15-17—Portland, Ore.
LEAGUE OF OREGON CITIES. Annual Convention (Multnomah Hotel). Exec. Sec., Herman Kehrli, Johnson Hall, University of Oregon, Eugene, Ore.

Oct. 15-18—Toronto, Canada
ASSOCIATION OF SCHOOL BUSINESS OFFICIALS. Annual Convention (Hotel Royal York). Sec., H. W. Anderson, 306 E. Lovell St., Kalamazoo, Mich.

Oct. 16-17—Little Rock, Ark.
ARKANSAS MUNICIPAL LEAGUE. Annual Convention (Hotel Marion). Exec. Dir., Glenn G. Zimmerman, 401 Main St., N. Little Rock, Ark.

***Oct. 18-19—Youngstown, Ohio**
STREET MAINTENANCE AND SANITATION OFFICIALS OF OHIO. Fall Meeting (Hotel Pick).

Oct. 18-20—Peoria, Ill.
ILLINOIS ASSOCIATION OF PARK DISTRICTS. Annual Convention (Hotel Jefferson). Exec. Sec., Miss Marjorie Dickinson, 621 E. Capitol St., Springfield, Ill.

Oct. 21-24—Mineral Wells, Texas
LEAGUE OF TEXAS MUNICIPALITIES—jointly with eight affiliated organizations. Annual Convention (Baker Hotel). Exec. Dir., E. E. McAdams, 109 E. 19th St., Austin 1, Texas.

Oct. 21-24—Washington, D. C.
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference and Exhibit (Shoreham Hotel). Exec. Dir., Albert H. Hall, 730 Jackson Place, NW., Washington 6, D. C.

Oct. 22-24—Pittsburgh, Pa.
ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA. Annual Water Conference (Hotel William Penn). Sec., W. M. Porter, Engineers' Society of Western Pennsylvania, Hotel William Penn, Pittsburgh 30, Pa.

Oct. 23-26—Atlantic City, N. J.
PENNSYLVANIA'S WATER WORKS ASSOCIATION. Annual Meeting (Claridge Hotel). Pres., John H. Murdoch, Jr., 121 S. Broad St., Philadelphia 7, Pa.

***Oct. 23-26—Omaha, Nebr.**
AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Meeting (Fontanelle Hotel). Exec. Sec., Hal H. Hale, 917 National Press Bldg., Washington 4, D. C.

Oct. 23-26—San Francisco, Calif.
AMERICAN WATER WORKS ASSOCIATION—California Section. Annual Convention (Fairmont Hotel). Sec.-Treas., William W. Aultman, P. O. Box 36, La Verne, Calif.

Oct. 24-26—Winston Salem, N. C.
NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Convention (Hotel Robert E. Lee). Exec. Sec., Mrs. Davetta L. Steed, 1009 Raleigh Bldg., Raleigh, N. C.

Oct. 25-27—Dubuque, Iowa
AMERICAN WATER WORKS ASSOCIATION—Iowa Section. Annual Convention (Hotel Julien). Exec. Sec., H. V. Pedersen, Marshalltown Water Works, Marshalltown, Iowa.

Oct. 25-27—Atlantic City, N. J.
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Annual Fall Meeting (Hotel Madison). Sec., C. B. Tygert, Box 178, Newark, N. J.

***Oct. 26-27—Fall River, Mass.**
MASSACHUSETTS FEDERATION OF PLANNING BOARDS. Annual Meeting (Mellen House). Sec., Ralph W. Horne, 11 Beacon St., Boston, Mass.

Oct. 28-31—Daytona Beach, Fla.
FLORIDA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION, jointly with the Florida Section of the AMERICAN WATER WORKS ASSOCIATION. Annual Fall Meeting (Princess Issena Hotel). Sec.-Treas., Perry M. Teeple, P. O. Box 210, Jacksonville 1, Fla.

Oct. 28-30—Kansas City, Kans.
KANSAS ASSOCIATION OF MUNICIPAL UTILITIES. Annual Convention (Town House). Sec., Edgar P. Schowalter, Board of Public Utilities, Kansas City 6, Kans.

Oct. 28-Nov. 1—Miami, Fla.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (McAllister Hotel). Exec. Sec., Edward J. Kelly, 1424 K St., NW., Washington 5, D. C.

Oct. 29-Nov. 2—San Francisco
AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Convention (Civic Auditorium). Exec. Sec., Reginald M. Atwater, M.D., 1790 Broadway, New York 19, N. Y.

Oct. 31-Nov. 2—Baltimore, Md.
AMERICAN WATER WORKS ASSOCIATION—Chesapeake Section. Annual Convention (Hotel Belvedere). Sec.-Treas., C. J. Lauter, 6955 33rd St., NW., Washington, D. C.

Nov. 7-9—Roanoke, Va.
AMERICAN WATER WORKS ASSOCIATION—Virginia Section. Annual Convention (Hotel Roanoke). Sec.-Treas., W. H. Shewbridge, State Health Dept., State Office Bldg., Richmond, Va.

(*Continued on page* 185)

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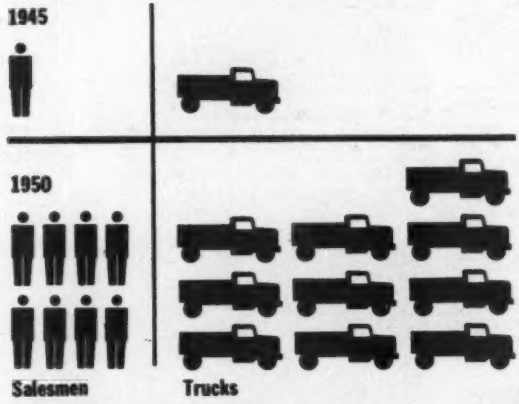

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(Continued from page 183)

Nov. 12-14—Winston-Salem, N. C.
AMERICAN WATER WORKS ASSOCIATION—North Carolina Section—and NORTH CAROLINA SEWAGE AND INDUSTRIAL WASTE ASSOCIATION. Annual Convention (Hotel Robert E. Lee). Sec.-Treas., (AWWA), E. C. Hubbard, State Board of Health, Raleigh, N. C.

Nov. 12-16—Miami, Fla.
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (McAllister Hotel). Exec. Sec., Weldon B. Wade, 30 N. LaSalle St., Chicago 2, Ill.

Nov. 25-28—Cincinnati, Ohio
NATIONAL ASSOCIATION OF CIVIC SECRETARIES. Annual Convention (Netherland-Plaza Hotel). Pres., Ronald E. Gregg, 417 Huron St., Toledo 4, Ohio.

Nov. 25-28—Cincinnati, Ohio
NATIONAL MUNICIPAL LEAGUE. Annual Convention (Netherland-Plaza Hotel). Exec. Sec., Alfred Willoughby, 299 Broadway, New York 7, N. Y.

***Nov. 25-30—Atlantic City, N. J.**
AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Annual Meeting (Radisson Hotel). Exec. Asst. Sec., Ernest Hartford, 29 W. 39th St., New York 18, N. Y.

***Nov. 26-27—Prescott, Ariz.**
ARIZONA MUNICIPAL LEAGUE. Annual Meeting (Hassayampa Hotel). Exec. Sec., Joseph C. Furst, 15 S. First Ave., Phoenix, Ariz.

Nov. 26-29—Dallas, Texas
NATIONAL TAX ASSOCIATION. Annual Convention (Hotel Adolphus). Sec., Ronald B. Welch, Box 1799, Sacramento, Calif.

***Nov. 27-30—Atlantic City, N. J.**
NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Meeting (Hotels Traymore and Claridge). Exec. Dir., James J. Smith, 603 Trenton Trust Bldg., Trenton 8, N. J.

***Nov. 29-Dec. 1—New York, N. Y.**
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS. Annual Meeting (Hotel Roosevelt). Exec. Dir., Charles S. Rhyne, 730 Jackson Pl., NW., Washington, D. C.

***Nov. 29-Dec. 1—Washington, D. C.**
AMERICAN PUBLIC WELFARE ASSOCIATION. Annual Meeting (Statler Hotel). Dir., Loula Dunn, 1313 E. 60th St., Chicago 37, Ill.

***Dec. 10-12—Washington, D. C.**
AMERICAN MUNICIPAL ASSOCIATION. Annual Convention (Statler Hotel). Exec. Dir., Carl H. Chatters, 1313 E. 60th St., Chicago 37, Ill.

***Jan. 21-24—Houston, Texas**
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Meeting (Rice Hotel). Exec. Vice Pres., Lt. Gen. Eugene Reybold, International Bldg., Washington 4, D. C.

New Report on Billboard Control

THE profusion of billboards and signs along our highways and in our cities has stimulated a number of local communities, counties, and states to issue regulations with respect to the location, size, and construction of these advertising devices. "Signs and Billboards," a *Planning Advisory Service* Information Report recently issued by the American Society of Planning Officials * discusses the problems created by these advertising practices and the measures which have been instituted to control them. The report also includes definitions, ordinance excerpts, the legal basis for such regulation, case citations, and a brief bibliography.

* Available only to subscribers to *Planning Advisory Service*. For further information write the American Society of Planning Officials, 1313 East 60th St., Chicago 37, Ill.

Prize-Winning Roses for Ninety Public Gardens

ALL-AMERICA ROSE SELECTIONS, Inc., has announced the start of a nationwide program to "Beautify America with Roses," the world's most popular flowers. Ninety public gardens throughout the country have been selected for the first plantings of the famous All-America Rose winners, the finest of the new varieties developed in this country and abroad. The program will be enlarged each year.

Under the new program, prize-winning A.A.R.S. roses are furnished to public gardens by the country's leading growers. The gardens to receive plants are selected by a special committee on the basis of merit and facilities for attractive display. The program is planned not only to enhance the beauty of public installations, but to enable rose lovers to preview new varieties which will grow well anywhere in this country.

Each application for the future establishment of public All-America Rose gardens will be judged by the committee on such points as maintenance, location, display possibilities, size of city, and number of visitors. City officials interested in having their municipalities qualify for such a garden should contact the All-America Rose Selections Public Information Office, care of L. Richard Guylay and Associates, 630 Fifth Ave., New York 20, N. Y.

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Municipal Purchasing News

Information for officials interested in equipment and services for the construction, operation, and maintenance of municipal utilities

The Disston DH-120, powerful extra-duty chain saw, makes felling big timber a matter of moments. Here, two woodsmen hasten to a safe position as a fir tree topples. The big saws have been unavailable to civilians since the Army contracted for large quantities during the present emergency. Last month however, Henry Disston & Sons, Inc., announced that the units are again available for civilian use. They are employed widely for city park maintenance as well as in the nation's timber stands.

Disston Plans Drive For Steel Scrap

With the "Fight Waste" plan, developed and promoted by Henry Disston & Sons, Inc., 1065 Tacony, Philadelphia 35, Pa., now operating in hundreds of plants throughout the nation, Disston has announced an extension of the campaign—a drive to get steel scrap into the channels of distribution.

Besides its drive to salvage steel scrap noted in its advertisements, letters to its industrial distributors, and a direct mail campaign to all users and manufacturers, the company has prepared a leaflet which is offered to the trade in quantity without charge.

The publication points out that real profits can be realized through scrap, and gives advice on the organization of a salvage committee within any plant to further the efficient handling of scrap.

"Party Line" Out of Date In Emergency Radio

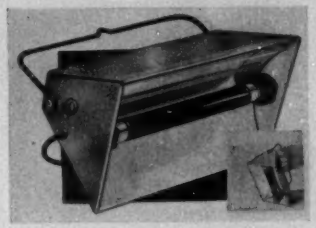
Listening to other people's conversations that don't concern them has long been a burden of the conventional radio-car patrolman. An all-electronics radio communication system of the General Electric Co., Schenectady 5, N. Y., removes this form of driver fatigue. The headquarters dispatcher now talks to individual drivers or selected groups.

With this equipment, a two-way radio system can be separated into as many as 10 groups. To reach a particular driver, the dispatcher first pushes a button which sends out a coded signal, activating all receivers in that driver's group. All drivers hear the call, but only the individual called answers. Other receivers are then silent on subsequent transmission because these messages are not preceded by the coded signal.

New Ultra-Violet Lamps For Police and Sanitation

Originally designed for defense purposes, a new line of BLAK-RAY high-intensity long-wave ultra-violet lamps are particularly adaptable for use in police, fire, and sanitation departments because of their improved ultra-violet output.

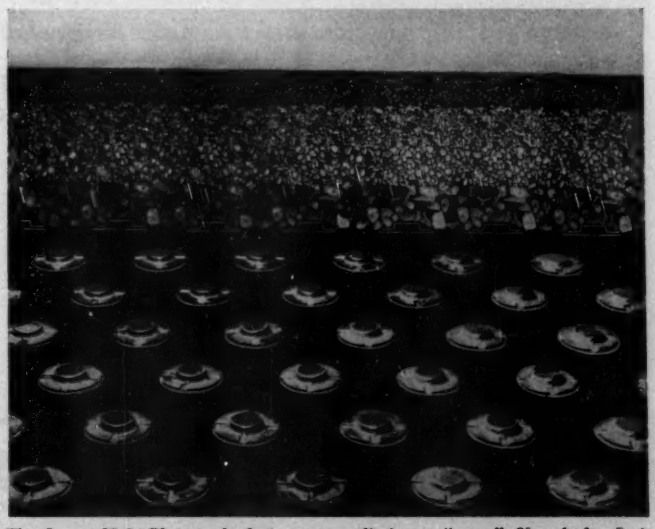
When directed at certain substances, the invisible "black-light" rays cause a phenomenon known as fluorescence, whereby these substances radiate a color different from their own. Thus, special tracer powders and pastes applied to articles and locations subject to pilferage, cling to the culprit's hands or clothing, and are invisible in ordinary white-light but stand out with startling clarity when exposed to the BLAK-RAY.



BLAK-RAY lamps are Underwriters' Laboratories Approved and are equipped with a self-filtering "Black-Light-Blue" tube that allows the long-wave ultra-violet rays (3,660 angstrom units) to pass through but filters out the undesirable rays in the visible portion of the spectrum. No additional filters are required and the cool-operating tubes will last from 2,000 to 3,000 hours.

Information on Ultra-Violet Light and its applications may be obtained by writing to Ultra-Violet Products, Inc., 145 Pasadena Ave., South Pasadena, Calif.

Underdrain System Eliminates "Upset" Filter Beds



The Layne Multi-Plate underdrain system eliminates "upset" filter beds. It is non-clogging, of the baffle-plate type, provides back-wash distribution, and low installation cost. According to the General Filter Co., Ames, Ia., the method provides every desired requirement for perfect collection of water from the filter bed and at the same time assures even and efficient filter backwash. Multi-Plates channel the upflow horizontally when backwashing a water purifying plant. These baffle plates are made from stainless steel to exacting dimensions.

PRELOAD PRESTRESSED TANKS

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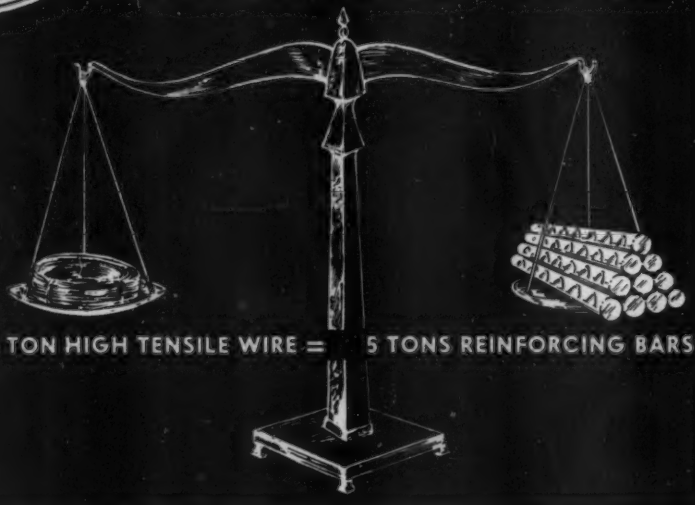
SEWAGE
INDUSTRIAL



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Send for information and brochure on Preload Prestressed Tanks

Thousands of tons of standard steel bars were saved on these tanks by Preload

Number of Tanks	Installation
8	N. East Treatment Works Philadelphia, Pennsylvania
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1	Gardner, Mass.
18	Hyperion Sewage Treatment Plant, Los Angeles, Calif.
1	Liberty, New York
8	S. Side Sewage Treatment Plant, Oklahoma City, Okla.
8	Hunts Point Sewage Treatment Plant, N. Y.
8	Owls Head Sewage Treatment Plant, New York
2	Oxford, England
2	Richmond, Indiana
4	Bergen County-Hackensack Riv. Sanitary Sewer Authority
8	Columbus, Ohio
2	Las Vegas, Nevada
1	Benton, Arkansas
1	La Follette, Tennessee
6	Lansing, Michigan
1	Belleville, Illinois
3	Syracuse, New York
2	Monticello, New York
1	Peoria, Illinois
1	Corpus Christi, Texas
2	Corpus Christi, Texas
1	San Marcos, Texas
1	Waxahachie, Texas
4	N. Side Sewage Treatment Plant, Oklahoma City, Okla.
1	Snyder, Texas
2	Phillipsburg, New Jersey
2	Elmira, New York
8	South West Treatment Works Philadelphia, Pa.

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The Preload Co. of Canada, Ltd.
7325 Decarie St., Montreal, Que.

Cuba Buys More TIFA Machines to Eradicate Menace of Malaria

Dr. Roberto Villa Leon, Commissioner of Public Works, Mosquito Control Division, of Cuba (right), and L. R. Kinsey, Deputy Commissioner of Public Works, Mosquito Control Division, Nassau County, N. Y., observe the Todd Insecticidal Fog Applicator in action.

Cuba's mosquitoes, who have fought a losing battle since 1947 against a battery of 6 TIFA insecticide fog machines, will be dismayed to learn that the Cuban Government has purchased an additional 10 machines for use by the Mosquito Control Division of the Department of Public Health, and the division charged with the eradication of malaria from the island.

Final negotiations for the purchase of the 10 new units were completed by Dr. Roberto Villa Leon, Commissioner of Public Works, Mosquito Control Division of Cuba, who in July visited the Todd Shipyards Corp.'s plant at 81-16 45th Ave., Elmhurst, Queens, L. I., N. Y. Dr. Villa also went to Freeport, N. Y., to discuss mosquito control with L. R. Kinsey, Deputy Commissioner of Public Works, Mosquito Control Division, Nassau County.

The TIFA machine, or Todd Insecticidal Fog Applicator, is a development of the Company's Combustion Equipment Division. Two feet wide, 2½ feet deep, and 3 feet high, it generates a low-hanging, lasting fog from special oil forced through an atomizer, and mixed with a blast of heated air. Insecticides, weed-killers, or fungicides may be mixed with this oil, and the controls on the panel of the machine permit the formulation of fog ranging from perfectly dry, which will not stain clothing, windows, or car finishes, to damp mist of large individual particle size.

The operator of the machine may also direct its nozzle in any direction he wishes, taking advantage of the breeze to spread the fog over selected areas, where it penetrates every square inch of space, leaving an invisible residue which is effective for some time, depending on the insecticide employed.

Cuba recently purchased 10 special vehicles, similar to but slightly larger than the American jeep, and the new machines will be mounted on these, permitting the carriage of larger quantities of insecticides. According to Dr. Villa, Cuba's malaria control people have eradicated the disease in certain sections of the island by intensive use of the 6 TIFA machines which are now in that country, and they hope to destroy it completely when the new units arrive.

Allis-Chalmers' Directors

The election of J. L. Singleton, vice-president in charge of the General Machinery Division, and R. S. Stevenson, vice-president in charge of the Tractor Division, to the board of directors of the Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., is reported by W. A. Roberts, president of the firm. They succeeded as directors, the late Walter Geist and W. C. Johnson.

Mr. Roberts also announced that in another action taken at the board session, W. E. Hawkinson, secretary and treasurer of the company, was named a vice-president, secretary, and treasurer.

FOR BETTER
pH Control
and WATER TESTS
there is nothing like
NON-FADING GLASS COLOR STANDARDS

Pocket Comparator No. 605

Permanent reliability of Hellige Glass Color Standards, accuracy of color comparison, simplicity of technique, and compactness of the apparatus are exclusive features of Hellige Comparators.

Write for NEW Catalog No. 600-10

HELLIGE
INCORPORATED
3718 NORTHERN BLVD. LONG ISLAND CITY 1, N.Y.
HEADQUARTERS FOR COLORIMETRIC APPARATUS

BRAXMAR BADGES

Standard Badges Since 1879

Write for circular illustrating badges for Police, Fire and other City, County and State Officials

John O. Veit, Pres.

C. G. Braxmar Co., Inc.
216 E. 45th St., New York 17, N. Y.

Use "GUNITE," For durability & economy

FOR REPAIRING: Reservoirs, Dams, Filter Plants, Sewage Disposal Plants, Tanks, Stadiums, Bridges, Sea Walls, Breakwaters.

FOR LINING: Reservoirs, Swimming Pools, Tunnels, Sewers, Pipe, Concrete, Brick and Steel Tanks, Stacks, Bunkers, Irrigation Ditches.

FOR CONSTRUCTING: Prestressed Tanks, Stacks, Piles, Sidewalls and Roofs, Steel Encasements.

The proper maintenance and repair of structures is more important now than ever before.

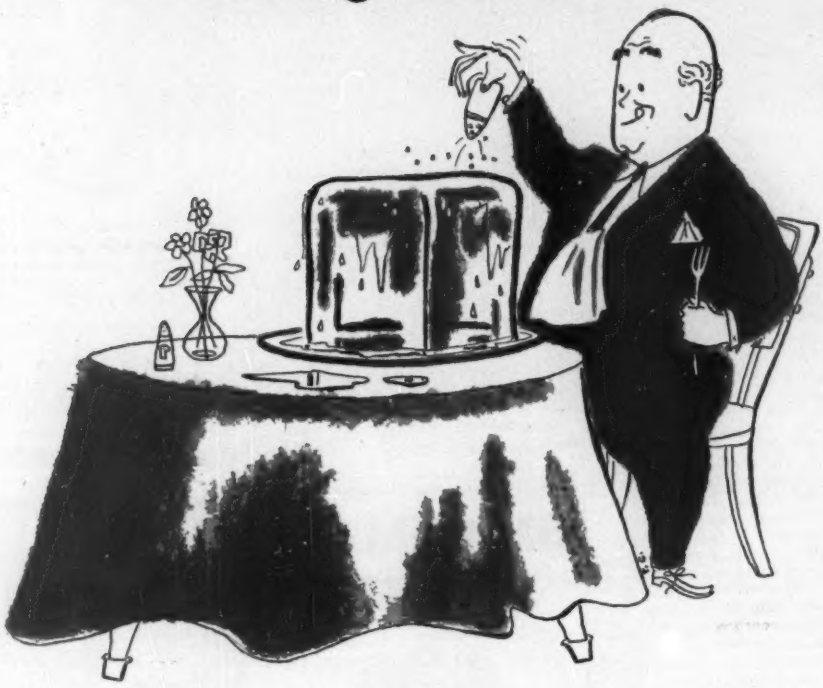
Write for 48-page illustrated booklet showing "GUNITE" at work.

Nationwide operation — Experienced Personnel

PRESSURE CONCRETE COMPANY

NEWARK 5, N. J., 193 Emmet Street
CHARLOTTE, N. C., Liberty Life Bldg.
CHICAGO, ILL., 37 No. LaSalle Street
FLORENCE, ALA., South Court Street

Do you "Season" your ice ...with salt?



If you use salt alone for ice control on your streets and highways you're solving one problem —safety—but you may be inviting another—corrosion.

Winter-weather worries have lessened for municipal officials since the introduction of BANOX*.

Scores of communities are enjoying the economy and effectiveness of salt—without corrosion—by adding 1 pound of Banox to each 100 pounds of salt.

Addition of Banox to the salt neutralizes the corrosive effects of road slush and brine—reduces the rusting of automobiles as well as municipal equipment and steel structures—ends the motorists' fears and complaints.

If you "season" your ice with salt—complete the job with Banox. Keep your community progressive.

Let us send you full information.

P.S. Don't miss the Banox demonstration at the APWA show in Detroit—Booth B-19.

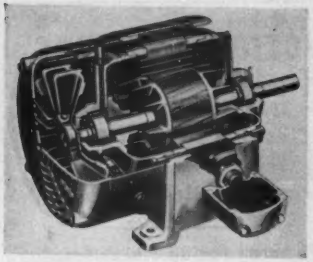
*T. M. Reg. U. S. Pat. Off.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH 30, PA.



Explosion-Proof Motor

A 10-feature totally enclosed motor for explosion-proof requirements has been developed by U. S. Motors. Made in capacities from 3 to 75 hp, this new motor, types SE and SES, carries the Underwriters' label in Class 1, Group D, for highly inflammable gases and volatile liquids, and in Class II, Groups F and G for combustible dusts. Other types SE and SS without label, for non-explosion-proof services are also available. Features incorporated include: sealed terminal, elongated spark-arresting bearing sleeves, streamlined housing, high-draft ventilation, removable cover, split hub fan, normalized castings, lubriflush bearings, asbestos-protected windings, and solid centricast rotor. Being completely sealed, this motor gives protection against external hazards, preventing intrusion of abrasives, acids, moisture and other deleterious substances. A new bulletin, No. 1629, describing the motors, may be obtained by writing U. S. Electrical Motors, Inc., 200 East Slauson Ave., Los Angeles, 54, Calif.

Holophane Refractors Demonstrated at Their Headquarters

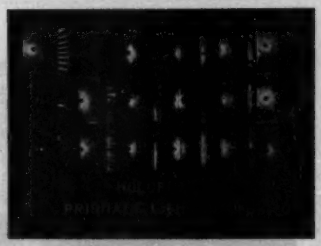
There is a Holophane Refractor for every type of street lamp, and luminaire. The prismatic principle of the Refractor, by which the light of the source is directed to where it will do the best job for pedestrian and motorist, has frequently been portrayed in both THE AMERICAN CITY and the *Municipal Index*. It can never be shown too often or even sufficiently, for it merits even wider use in street luminaires as an economy as well as a traffic-safety device.

What is good on the streets is also good in hospital operating, drafting and control rooms, and wherever light is required in specific areas. This was demonstrated on June 28 before 100 interested persons in the enlarged executive offices of the Holophane Co., Inc., 342 Madison Ave., New York 17, N. Y. One hundred eighteen Refractors and 80 lenses, all different, says H. L. Logan, vice-president, offer a wide variety of light-control features.

Best results in lighting start with a practical knowledge of the human eyes which have a psychological function of insuring safety as well as their job of seeing. Modern lighting must stimulate both factors or light receptors—the cones for seeing and the rods for psychological alertness. Just as heating must take in the entire cubic space, so must lighting not be restricted to a plane or to spots.

Chief municipal interest in Holophane Refractors is in their ability to place the light up and down a street or four ways at an intersection. (Upper right hand corner and below in the photograph). Also important is the higher concentration of useful light so that greater spacings between poles may be used for greatest economy.

Further, the introduction of Refractolens (top row, second from right) units whereby widespread street lighting can be accomplished from units mounted on the fronts of buildings, without the use of poles, is a recent Holophane lighting accomplishment.



"OLD STAND-BY" FOR 165 YEARS

TRENCH POURED

BELL & SPIGOT JOINTS

SPECIFY McWANE B & S OPEN BELL

So, you like to pour your own joints! OK! Trench-poured joints have been a stand-by for close to two centuries. Many thousands of miles of cast iron pipe line with this old stand-by joint have long been in service. Specify McWane Open Bell Super deLavaud Cast Iron Pipe, in 18-foot lengths. Bells and spigots are uniform, make better trench-poured joints. The pipe is strong, easy to cut and tap. For complete data and prices, write or wire McWANE CAST IRON PIPE COMPANY, BIRMINGHAM 2, ALABAMA.

McWane Open Bell B & S Super deLavaud Pipe is furnished in sizes 3-inch through 12-inch.

McWANE CAST IRON PIPE LASTS FOR CENTURIES

CONSTRUCTION CASTINGS

for

Highway • Municipal • Building
Industrial • Communication • Public
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Patterns for 15,000 different
Gray Iron Castings used on
Construction Projects.

Write for our 135-page
Catalog "R," Second Edition

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YOU GET **PPD*** PIN POINT DETECTION

ONLY WITH

GOLDAK EQUIPMENT

The name GOLDAK on electronic instruments eliminates guesswork ... it's your assurance of Pin Point Detection at all times, in any kind of weather. Throughout the world, with companies who need instruments that are accurate and durable, first choice is GOLDAK.

MODEL 620
BOX & VALVE
LOCATOR

Pin Point Detection of Goldak's Model 620, saves you time and money, with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals. Large areas surveyed in a few moments. Sharp, clear signals. Untiring operation, weighs only 6 lbs. Sturdily constructed, all-weather use. High quality parts assures maximum sensitivity, low operating and nominal replacement costs.

MODEL L46
SENIOR
LEAK DETECTOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts, assures unequalled performance. Save time and labor, eliminate costly waste leakage with Goldak Model L46.

Write for FREE literature!

The GOLDAK Company
Leading Makers of PIPE LOCATORS
Since 1933

1544 W. GLENOAKS BLVD.
GLENDALE 1, CALIF.

Rockwell Expands Southward

This is a perspective sketch of the new plant at Tupelo, Miss., of the Rockwell Manufacturing Co., 400 North Lexington Ave., Pittsburgh 8, Pa. Construction was started in March and is scheduled for completion by September. The one-story building covers 150,000 square feet. Rockwell builds a wide variety of products, including valves, gas meters and regulators, water meters, taxi meters, fare registers, and power tools. Some of these products will be fabricated in the new plant, but it will be used as a southern service depot for much of the other equipment.

Develops New Flow Meter

A new type of flow meter which has functional design, gives fast and accurate response over an entire range, and features low initial cost and maintenance, has been developed by the Minneapolis-Honeywell Regulator Co., 2709 4th Ave., Minneapolis, Minn.

Engineers of the Brown Instruments Division of the company report that the new flow meter includes such important advantages as an evenly graduated meter scale and electronic integration. It is available either as a mechanical flow meter with integral recorder, or as an electrical transmitter to be used with a Brown inductance bridge receiver.

Of the differential type, it is readily installed on a flow line. The meter body is mounted in a convenient location near the line, and the differential pressure lines from the orifice (or other primary element) are piped into the ½-inch connections provided on the meter. For electrical transmitting meters, a three-conductor cable is run between the meter body and the remotely mounted receiver.

The new meter is supplied in three ranges: 53, 119.25, and 212 inches of water, and for 750 and 1,500 psi static pressure. For dry calibration, the three ranges are slightly greater.

Sales Appointments

W. E. Hagemeister has been promoted to assistant sales manager, and W. H. Riddell, assistant to the sales manager, for the Keystone Asphalt Products Co., a division of the American-Marietta Co., 101 E. Ontario St., Chicago, Ill., it is announced by J. E. Poole, general sales manager.

With American Marietta since 1939, Mr. Hagemeister returned in 1946 after service with the Navy to become sales correspondent for Keystone.

Mr. Riddell will be in charge of sales correspondence, replacing Mr. Hagemeister.

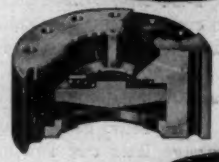
The
SEWER SCOOTER*
* Trademark

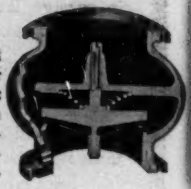
Sewers Clean Themselves
With a Sewer Scooter

100% self-propelled for 6" to 96" sewers—Is equally effective for all conditions and problems of sewer maintenance—completely cleans sewers of all sediments: rocks, gravel, sand and "hard-to-move" sludge.
Quick and efficient in operation. Investigate today! Ask for Bulletin.

Dealers—Some good territory open

Fitzgerald Engineering Co., Inc.
P. O. Box 289-G,
Coral Gables 34, Fla.





You can install Williams-Hager flanged Silent Check Valves in your water system in any position . . . horizontal, angular, vertical with flow upward or downward . . . and put an end to costly and annoying water hammer. Easy to install or reseat without special tools, they are durable and compact with easy accessibility and low friction. Available in standard pipe sizes from 1" to 20". Investigate the many features of these valves . . . and save!

Write today for Bulletin WH-100.

CHECK VALVES

THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge Cocks . . . Steam Traps . . . Pump Governors . . . Feed Water Regulators . . . Water Columns

3013 Pennsylvania Ave. • Pittsburgh 33, Pa.

T-LOCK AMER-PLATE

THE NEW PROTECTIVE LINING FOR CONCRETE PIPE AND STRUCTURES

T-LOCK AMER-PLATE is a practical sheet lining that provides enduring and economical protection despite extremely corrosive conditions. It is the result of many years experience in the manufacture and application of AMERCOAT protective coatings for all types of industries.

This heavy-duty protective lining is especially adapted for use in sewage lines and structures exposed to severe corrosive action where permanent protection is of vital importance.

Composed of inert resins and plasticizers, AMER-PLATE is impervious to gases, highly resistant to most acids, alkalies, alcohol, oils, salts and petroleum products, has very low moisture vapor transfer and will not support combustion. Odorless and tasteless, it contains no toxic materials.

T-LOCK AMER-PLATE is applied to the inner forms of concrete pipe, structures and tanks. When the concrete is poured, the Tees are embedded and locked into the concrete and become an integral part of the finished product.

Over 10 years of development and testing have proved it to be practically indestructible in the service for which it is designed.

Amercoat CORPORATION
A Division of
American Pipe and Construction Co.
4809 Firestone Blvd., South Gate, Calif.

Here's how this tough, long-lasting, corrosion-resistant lining is LOCKED IN!

Extruded T's 3/8" high anchor lining in concrete
Concrete poured in form
Flexible to fit straight or curved surfaces, corners, etc.
.060" Thick (Dark glossy surface)

Placing pipe reinforcing cage over T-Lock sheet set up around inner-form.

Example of T-Lock sheet formed around complex structural members.

Establishes Consulting Service

George E. (Doc) Symons, managing editor of *Water & Sewage Works*, New York City, resigned that position effective Sept. 15th, and has established an independent consulting service. For the immediate future, his office will be located in Larchmont, N. Y.

Dr. G. E. Symons

Dr. Symons expects to concentrate on consultation on plant and laboratory design, research, and operation problems in the field of water, sewage, and industrial waste treatment. He will also do free-lance writing and editing of technical articles, reviews of technical meetings, bulletins, house organs, specifications, and engineering reports. He will serve as contributing editor of *Water & Sewage Works;* continue to serve as consultant to B-I-F Industries of Providence, R. I., and as editor of *The Courier* for Builders-Providence, Inc., the Omega Machine Co., and %Proportioneers, Inc.%

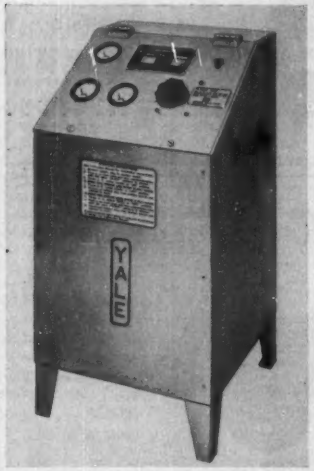
New Battery Charger For Industrial Trucks

A new industrial battery charger for units up to 55 ampere-hour capacity is available from the Philadelphia Division, Yale & Towne Mfg. Co., 11,000 Roosevelt Boulevard, Philadelphia 15, Pa. Operated on the selenium rectifier principle, the charger is designed to give simplified maintenance-free operation, prolong battery life, and save power. The manufacturer reports that these results are accomplished primarily by an automatic controller, which governs the amount and time of charge and a complete lack of moving parts.

The charger's dual clock control affords identical protection to both new and old batteries, whether fully or partially charged either in a cold or warm area.

There are no moving parts to maintain. An extra large plate area obviates the need for a fan. There are no commutators or brushes to be lubricated or create friction.

Available for either lead-acid or nickel-alkaline batteries, the charger can be plugged into any standard 110/115 volt 60 cycle outlet.



Industrial truck battery charger—designed to give simplified, maintenance-free operation.

San Antonio Representative For B-I-F Industries

Builders-Providence, Inc., and the Omega Machine Co., divisions of the Builders-Iron Foundry Industries, 345 Harris Ave., Providence, R. I., have announced the appointment of E. G. Langhammer of San Antonio, Texas, as representative for the sale of their equipment.

President of the Texas Filter Co., Mr. Langhammer will also continue to represent %Proportioneers, Inc.%, another division of B-I-F Industries. The territory covered in this overall representation is that served out of San Antonio.

PITT CHEM Tar Base Pipeline Enamel is a basic material of the tough, metal-preserving sheath that guards thousands of miles of America's greatest underground pipelines from corrosion. Dependable PITT CHEM coatings are being specified for more new lines each day because they're easier to apply and more dependable in service—the result of unvarying quality control made possible by our completely integrated operation.

● You can get prompt delivery now on Standard, Modified and Plasticized grades of PITT CHEM Pipeline Enamels and Primers.

WRD 1752

OFFICES:
NEW YORK CHICAGO
ST. LOUIS TULSA
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LOS ANGELES
SAN FRANCISCO

Protective Coatings Division
PITTSBURGH
COKE & CHEMICAL CO.
GRANT BUILDING · PITTSBURGH 19, PA.

Power failure is no light matter!

FAIRBANKS-MORSE GENERATING SETS

Many things can cause power failure—fires, explosions, traffic accidents, human error. And all of them can lead to injuries, property damage—even death. Then may come lawsuits and staggering debts.

Your own business is not immune. But the severity of the disaster can be minimized if you have a Fairbanks-Morse Generating Set standing by to cut in instantly when city or rural high line service is halted.

A Fairbanks-Morse Generating Set is the cheapest insurance you can buy! Ask your local Fairbanks-Morse dealer to show you why. Or write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE,

a name worth remembering

THERE IS ONLY ONE QUALITY OF RIC-WIL PREFABRICATED INSULATED PIPING . . .

THE *BEST* FOR THE JOB!

Specify RIC • WIL

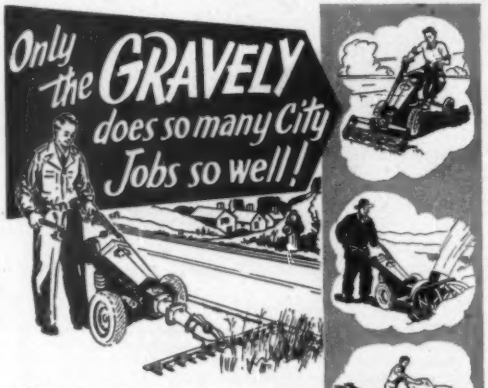
Designed and manufactured to fit *all* your insulation, protection, and installation specifications exactly, Ric-wil Prefabricated Insulated Piping Systems provide an allover economy in fast installation, high operating efficiency, and low maintenance cost.

The same factors that have made Ric-wil "the Greatest Name in Insulated Piping" will give your system the BEST for the job!

Ric-wil PREFABRICATED INSULATED PIPING — UNDERGROUND OR OVERHEAD

THE RIC-WIL COMPANY · CLEVELAND, O.

Only the GRAVELY *does so many City Jobs so well!*



Solve your city lawn and maintenance problems—and save time and money too! . . . The powerful 5-HP. Gravely Tractor does 20 jobs faster, better, easier! 20 tools to choose from for your particular needs, all powered by the same rugged, dependable tractor!

All-gear drive, power reverse, city-tested for 30 years!

"Power vs. Drudgery" tells how Gravely POWER solves your city upkeep and maintenance problems fast! Write for it today!

Gravely Motor Plow & Cultivator Co.
BOX 973 DUNBAR, WEST VIRGINIA

DON'T LET OLD MAN WINTER STOP *Your* PIPE INSTALLATIONS

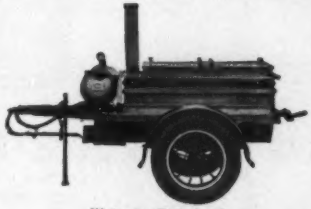
Free booklet tells how to save up to 80% with this small inexpensive tool that pushes pipe (up to 15" diameter) through the ground, under the frost line, at the rate of 1 to 5 feet per minute.

Address Dept. P

GIANT MFG. CO.

Council Bluffs, Ia.

Connery's Style W Heating Kettle Made in 75, 110, 165 and 210 Gallons.

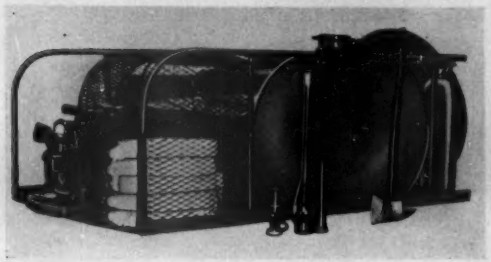


For speedy heating of Tar and Asphalt for road, street and airport runway repairs use Connery's style W kettle, the most efficient heating kettle of its kind.

Write for Bulletin 87.

CONNERY CONSTRUCTION CO.
4000 N. Second Street Philadelphia 40, Pa.

Truck-Mountable Fire Fighter For Civil Defense and Towns



Nozzles for straight steam and fog are featured in this fire pump.

The Porto Pumper converts a truck into a fire fighter for small towns and civil defense organizations. The unit consists of a 200-gallon tank, a gear pump driven by a 4-cycle gasoline engine, 200 feet of fire hose, aluminum extension ladder, and nozzles for straight stream and fog. Quickly mounted in a truck, any water source will do—hydrant, well, ditch, pond or stream, clean or muddy. It can also be steadily removed from the truck, if the latter is needed, and placed even on soft ground.

Full information and price are available from Porto Pump, Inc., 227 Iron St., Detroit 7, Mich.

Reduces Smoke Odor Damage

When a fire occurs in a commercial establishment there is usually more smoke than flames, and more smoke odor damage than actual fire damage. The odor from smoke is absorbed by everything in the building—by rugs, draperies, upholstery, coats, dresses, suits, furs, and textiles.

There is a service whose business is to eliminate residual smoke odors from enclosed spaces, including the contents. The men trained in it are available on short notice to examine the damage, recommend the correct treatment, estimate its cost and deliver the service.

Airkem is the trade name for a number of products in liquid chemical form manufactured by Airkem, Inc., 241 E. 44th St., New York 17, N. Y. One of the best known of these is Air-Wick, the company's household product. Other products are used in commercial, institutional, and industrial establishments. Osmix 21 and 22 are specifically designed to remove smoke odors.

A fire recently occurred in a large terminal warehouse in Jersey City, N. J. All 12,661 cases of shell eggs in cold storage were contaminated by smoke odor. It appeared the insurance claim would be around $200,000. Only 200 cases were actually damaged by water soaking or by the fire; the remaining 12,461 cases were contaminated by odor only.

Airkem was called in three days after the fire and the next day began using its special smoke counteracting formulas. Within 48 hours the smoke odor had been eliminated. The eggs were then approved by the health authorities and sold in the regular commercial channels at a normal price. The cost of the decontamination was $457.

Consulting Engineer

James Romano has been appointed to the engineering staff of the Water Works Division of Gannett Fleming Corddry & Carpenter, Inc., engineers of Harrisburg, Pa.

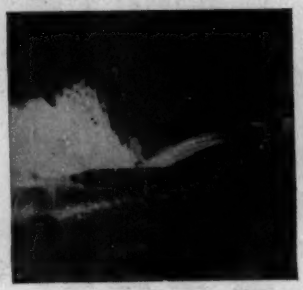
A graduate of West Virginia University, he served as an officer in the Corps of Engineers in the United States and European Theater for five years, and has been with the U. S. Engineer Corps for 12 years on river and flood control work.

WATER COSTS GO DOWN when you install CAISSON WELLS

Caisson Well means:
LIFELONG INSTALLATION and LOW WATER COST

Would you believe that water can now be produced at a cost of less than 2 cents per 1,000 gallons, including pumping, operation, maintenance and amortization?

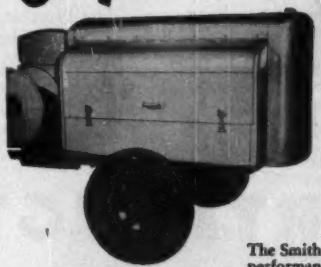
LET US PROVE IT TO YOU



CAISSON WELLS, INC.
Ground Water Engineers and Contractors
33 W. 42nd St., New York 18, N. Y.

Compressed Air to handle most jobs **For Less!**

smith
MODEL 105-P
AIR COMPRESSOR

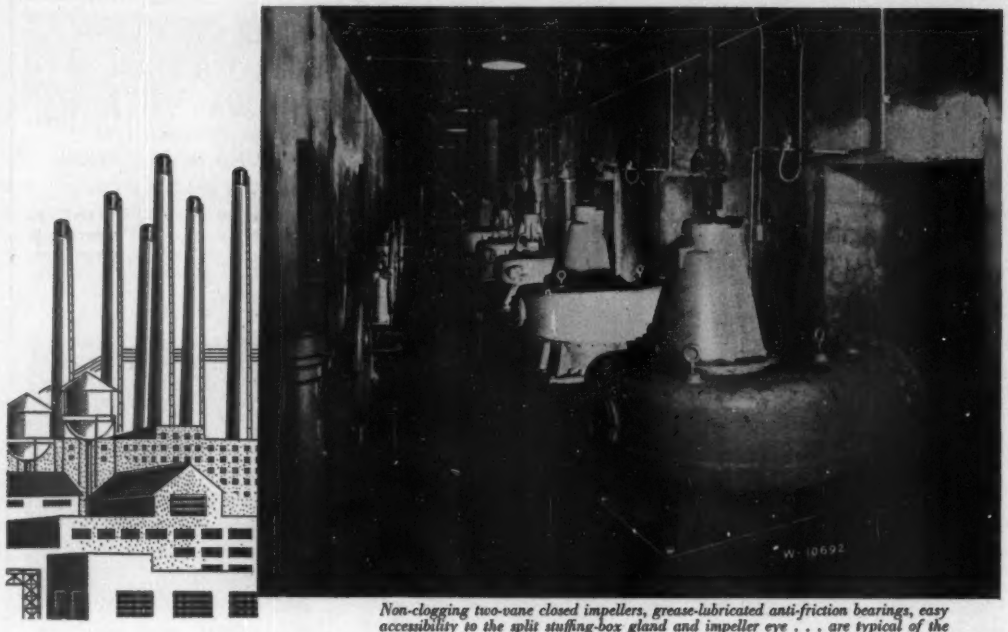


Model 105-P. Has self-starter, battery ignition, voltage regulator, large radiator capacity with thermostat for quick warmup.

The Smith 105-P delivers smooth power, gives long performance, and will handle most of your compressor work, for less! Powered with Chrysler Ind. 15 Industrial Engine with 377 cu. in. displacement. Delivers 105 cu. ft. per minute. Has sodium cooled valves and Stellite valve seats in engine. Stainless steel disc type valves and Manganese Bronze seats in compressor. Heavy duty with light weight (2100 lbs.). *Write for literature and prices.*

Also the SMITH 70-P AIR COMPRESSOR

GORDON SMITH & CO. 425 COLLEGE ST. BOWLING GREEN, KY.



Non-clogging two-vane closed impellers, grease-lubricated anti-friction bearings, easy accessibility to the split stuffing-box gland and impeller eye . . . are typical of the many Worthington MIXFLO features assuring low-cost, trouble-free sewage pumping.

How is Bridgeport's Sewage Pumped?

It's full of industrial waste . . . a problem built for Worthington Pumps

Here's another municipality which has turned its sewage pumping over to Worthington—100%.

These five Worthington Vertical MIXFLO sewage pumps are located in Bridgeport's Westside sewage plant—installed in 1946. Three are 20-inch, two are 16-inch MIXFLOS.

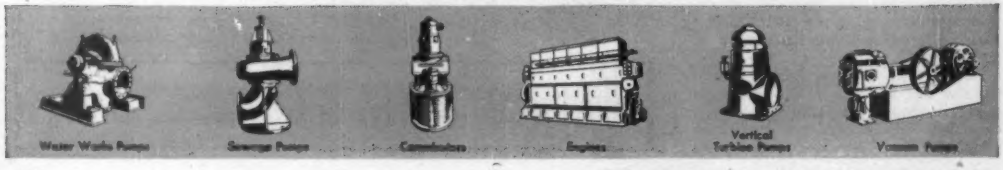
Bridgeport's Eastside plant duplicates these five pumps, and in addition uses two Worthington dry vacuum pumps and a Worthington air compressor.

In many other places, too, Worthington—world's largest manufacturer of pumps—is keeping pace with developments in sewage treatment and disposal by furnishing pumps of utmost dependability.

The Worthington MIXFLO line offers the industry's widest choice of sizes and types. So take a tip from New York, Chicago, Philadelphia, Bridgeport—find out why *there's more worth in Worthington.* Write Worthington Pump and Machinery Corporation, Public Works Division, Harrison, New Jersey.

WORTHINGTON

SEWAGE PUMPS W.1.1



Chicago District Manager for Municipal Service Company

The promotion of E. Allen Bailey to the position of Chicago District manager is announced by the Municipal Service Co., 908 Grand Ave., Kansas City, Mo. The company specializes in furnishing and installing mechanical equipment for both water and sewage treating plants, and states that it is the only one of its kind operating on a nationwide basis.

E. A. Bailey

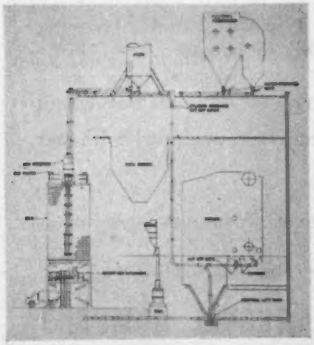
A graduate of Cornell University, Mr. Bailey has served with the firm's field and sales engineering departments. He will be located in the Engineering Bldg., 205 W. Wacker Drive, and will be in charge of the territory comprising Wisconsin, Minnesota, Iowa, Illinois, Indiana, Ohio, and Michigan.

Jamestown, N. Y., Uses Vacuum Ash Handling System

The Beaumont Birch Co., 1501 Race St., Philadelphia 2, Pa., designed and furnished an 8-inch full Vac-Veyor ash handling system for the City of Jamestown's new electric power plant addition. According to the manufacturer, the system eliminates the need of manually handling the ash, and it reduces maintenance and supervision to a minimum. Ash, fly ash, soot, and dust are conveyed in a dry condition by means of vacuum through pipes from the intakes to a receiver on top of an ash storage silo.

An outstanding feature of the Vac-Veyor system is its automatic sequential control, operated from a control panel located in the boiler room. Motor-driven rotary vane feeders are employed to feed the soot into the ash line. The system is so designed that from the control panel, the first rotary vane feeder is started and runs until the hopper is empty, at which time the control automatically stops it and starts the second feeder.

The ash and fly ash are fed into the ash line by enclosed gates and prevent dust in the boiler room. A rotary ash unloader beneath the storage silo is operated by push-button control.



General arrangement of the Beaumont 8-inch full vacuum ash handling system with automatic sequential control, installed for the City of Jamestown, N. Y.

Sydney William Kitson Of Worthington Dies

Sydney William Kitson, manager of the public works division of the Worthington Pump and Machinery Corp., Harrison, N. J., died August 28th in the Deaconess Hospital, Boston, Mass., after a brief illness. Fifty-three years of age, he had been a resident of East Orange, N. J.

Surviving are three sons: Malcolm, Ralph, and Sydney.

Mr. Kitson was associated with Worthington for more than 30 years. He was a member of the National Society of Professional Engineers, the American Water Works Association, a Mason, and a member of the American Legion.

Mr. Kitson was a lieutenant during World War I.

M & H Mechanical Joint
IBBM AWWA Gate Valve

Purchase price (or first cost) of a valve is not its real cost. Maintenance engineers appraise the true cost of a valve as cost per year of service—i.e., purchase price plus maintenance costs divided by years in operation.

On that basis, M & H likes comparison because M & H Valves are designed to last longer and entail little or no maintenance cost. Sizes 2 to 30-inch, with all end connections, including Mechanical Joint as shown.

Installing M & H Mechanical-Joint Valves into an existing pipe line is easily and quickly done by common labor with Mechanical Joint Cutting-In Sleeves. The job of regular inspection and maintenance of fire hydrants is also greatly simplified if auxiliary valves are installed for each hydrant, and an M & H Mechanical-Joint Valve makes such a job an easy one.

MECHANICAL JOINT
CUTTING-IN SLEEVE

M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

M&H PRODUCTS Everywhere

A BRILLIANT NEW MEMBER

of the GORMAN-RUPP

LIGHT WEIGHT PUMP FAMILY

The "PELICAN"

A WONDERFUL PUMP IS THE PELICAN

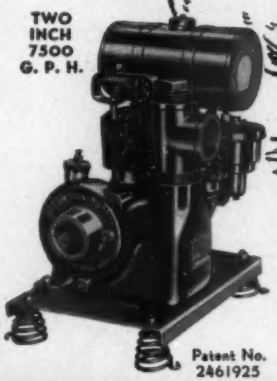
The Lowest Priced Two-Inch Pump Of Its Capacity On The Market!

The Pelican is the Quickest Priming, Fastest Pumping, "never quit" pump available, - it challenges any pump its size and type to equal its performance.

- **Suction lift** - up to 25 feet at sea level.
- **Automatic Self-priming** - no ports or valves, - just start the pump and you start the water.
- **Portability** - constructed of sturdy cast aluminum with carrying handle for easy portability. One man can easily handle the Pelican.
- **Non-Clogging** - any muck or solids that will pass the intake strainer will pass through the pump.
- **Simplicity** - the impeller, the only moving part, is mounted directly on the engine shaft and operates at engine speed.

There are so many practical uses for Gorman-Rupp Lightweight Pumps that it is impossible to list them. They are invaluable for utility and municipal applications. Their trouble-free performance and Gorman-Rupp guarantee are your positive assurance of satisfaction. Write for bulletin No. 7-LW-13.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO



Patent No. 2461925

The Pelican 2" - wgt. 70 lbs. 7500 g.p.h. - Primes in 99 sec. at 25 ft. suct. lift.

The Midget 1½" - wgt. 62 lbs. 5500 g.p.h. - Primes in. 75 sec. at 25 ft. suct. lift.

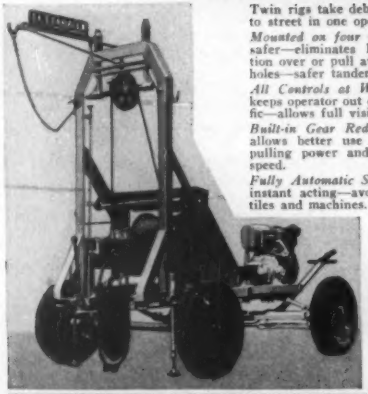
The Hawk 2" - wgt. 110 lbs. 10,000 g.p.h. - Primes in 47 sec. at 25 ft. suct. lift.

The Eagle 3" - wgt. 117 lbs. 18,000 g.p.h. - Primes in 79 sec. at 25 ft. suct. lift.

A COMPLETE LINE OF ENGINE POWERED AND ELECTRIC MOTOR DRIVEN SELF-PRIMING CENTRIFUGAL PUMPS

NEW IMPROVEMENTS
Cable Drum Clutch
Upper Arch Sheave
Automatic Cable Level Wind

OK CHAMPION
Power Sewer Cleaner



Twin rigs take debris from sewer to street in one operation.

Mounted on four wheel trucks—safer—eliminates lifting to position over or pull away from manholes—safer tandem towing.

All Controls at Working End—keeps operator out of passing traffic—allows full vision of work.

Built-in Gear Reduction Ratio—allows better use of engine for pulling power and bucket travel speed.

Fully Automatic Safety Clutch—instant acting—avoids damage to tiles and machines.

CHAMPION CORPORATION
Hammond, Indiana

SEND FOR LITERATURE

Champion Corporation, 4716 Sheffield Ave., Hammond, Indiana
Please send information on new OK Champion Power Sewer Cleaners.

Name.....Title.....

Address.....

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

Prompt Shipment

Inquiries and orders solicited

NORTHERN GRAVEL COMPANY
Muscatine, Iowa
P. O. Box No. 307 **Phone: 193**

Ralph Boyer Awarded The Lamme Medal

Ralph L. Boyer, vice-president and chief engineer of The Cooper-Bessemer Corp., Mount Vernon, Ohio, has been awarded the Lamme Medal, one of Ohio State University's highest honors. The 1951 awarding of the medal was made to Mr. Boyer for the development of today's important gas-diesel engine and the high compression spark-ignited gas engine.

R. L. Boyer

The annual conferring of this highly coveted medal for meritorious achievement in engineering is a result of an endowment to Ohio State University by Benjamin G. Lamme, former chief engineer of the Westinghouse Corp., who initiated practically all design calculations that go into the construction of generators and motors. Chosen this year by the faculty committee of the College of Engineering, Mr. Boyer is the 24th Ohio State graduate so honored from over 10,000 Ohio State engineering graduates since 1892.

While an undergraduate and 2 years after graduation in 1924, he worked with Dr. Elmer Sperry in the pioneering development of the compound diesel engine.

In 1926, he joined The Cooper-Bessemer Corp. as diesel engineer; was made assistant chief engineer in 1929, and chief engineer in 1938. Mr. Boyer was elected vice-president in 1947, and a director of the company in 1950.

In 1950, on behalf of the American Society of Mechanical Engineers, he presented a paper on America's progress in engine development before the World Power Conference.

Mixermobile Appoints Purchasing Agent

Appointment of Cecil M. Spekker as purchasing agent for Mixermobile Manufacturers, 8027 N. E. Killingsworth, Portland 20, Ore., is reported by Gus Wagner, general manager of the firm.

C. M. Spekker

Since 1939 Mr. Spekker has been employed by the Wagner brothers who, with their father, the late Ed Wagner, founded Mixermobile Manufacturers. He first was employed on construction projects by the Wagner Construction Co., and later became associated with Mixermobile Manufacturers' shops where concrete mixing and construction equipment is made for use throughout the world.

Hyster District Representative

Appointment of Graydon Broms as district representative for the Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore., is announced by Ray Ronald, sales manager of the company's western division.

Mr. Brom's territory includes most of Oregon, Washington, Idaho, western Montana and Alaska, the Yukon, and British Columbia.

With the Hyster Co. for nearly 12 years, he was parts foreman before his promotion to the order desk two years ago.

Graydon Broms

The concern has plants at Peoria and Danville, Ill., and Portland. It manufactures 20 different tractor tools and logging attachments in addition to front-end tractor-loaders used by municipalities.

SINGLE AND DOUBLE LID

METER BOX COVERS

for every Climate and Condition

Ford Meter Box Covers are made in sizes to fit on meter box barrels or tile from 15" to 36" diameter. They are made with several sizes of lid openings, with inset or overlapping lids, for sidewalk or lawn installations, for light or heavy traffic conditions. For really cold climates double-lid covers are recommended.

All are fitted with the Lifter Worm Lock that effects a tight fit, permits easy opening even when sealed with ice or dirt and makes it easy to lift the lid with the key.

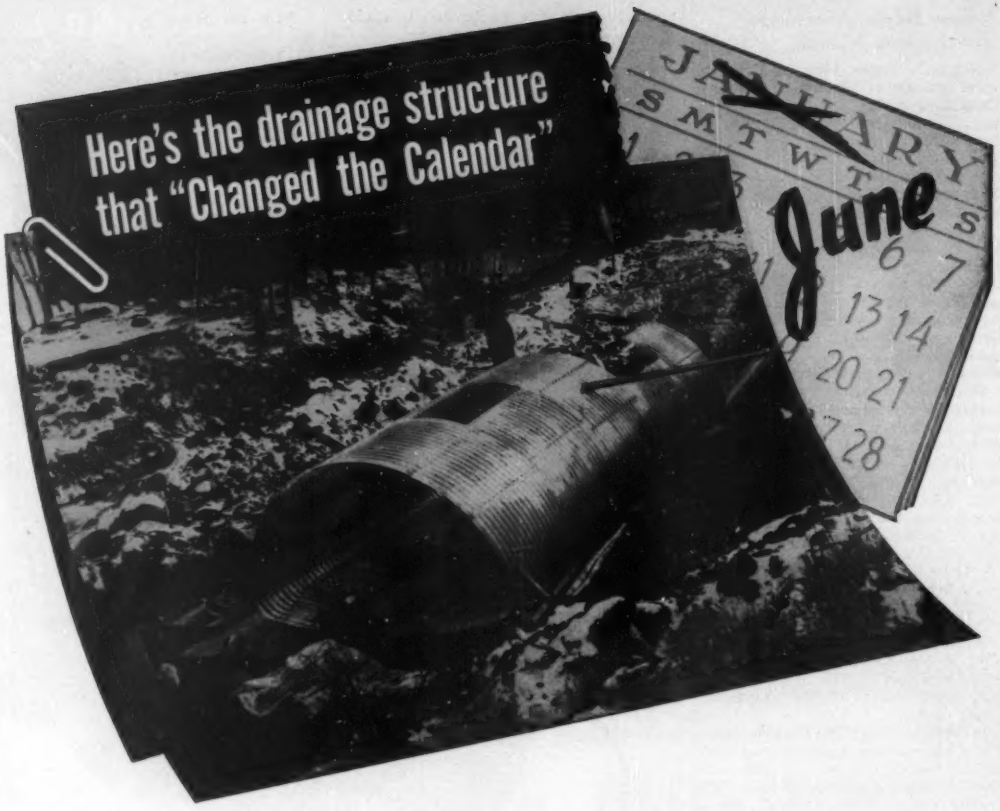
Send for complete Ford Catalog No. 46. It describes Ford Covers and many other useful devices for more efficient metering of water services.

THE FORD METER BOX COMPANY, INC.

FORD

FOR BETTER WATER SERVICES

Wabash, Indiana



It used to be that the construction season ended when winter began.

But now, thanks to Armco MULTI-PLATE, you can install large sewers, stream enclosures and similar structures the year around. Pre-curved, corrugated metal sections are bolted together on the job to form sturdy, long lasting, full-round pipe, arch or PIPE-ARCH. No curing, no delay. The job is done quickly with a small unskilled crew. Costs are low.

Later on, should conditions change, your MULTI-PLATE structure can be extended or salvaged for use elsewhere. There is no loss of material.

MULTI-PLATE is just one of the many Armco Drainage Products designed for year-around installation. There's Plain Galvanized Armco Corrugated Metal Pipe for culverts and similar uses, Armco PAVED-INVERT Pipe to combat erosion and Armco ASBESTOS-BONDED Pipe for severe corrosive conditions. Where headroom is limited, Armco PIPE-ARCH solves the problem. Write for the complete story. Armco Drainage & Metal Products, Inc., 1941 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

ARMCO

Protective Lighting Outside Plant Properties

"Plant Street"

Protective lighting for entrances, parking lots, railway sidings, loading docks, and storage areas, is much to the fore these nights. Spherolite and Fresnelite luminaires manufactured by Line Material Co., Milwaukee 1, Wis., offer a variety of light patterns which in most cases cover the requirements of protective lighting installations.

The Spherolite provides IES light patterns, Type I through Type V, and is designed for use with incandescent lamps up to 575 watts on multiple circuits or 10,000 lumens on series circuits. With no basic changes or additions, it will accommodate 11,000, 15,0000, or 20,000 lumen vertical position mercury-vapor lamps.

The Fresnelite which projects a wide, flat beam of light for considerable distance, was designed for glare lighting of outer fence areas. It is mounted inside the fence boundary and projects a bright beam just outside the fence. A person approaching a fenced area is brilliantly illuminated until he reaches a point 5 or 10 feet from the fence and from there on to the fence he remains silhouetted against a brilliant background.

Manages Koppers' Pacific Coast Sales

J. C. Macon, Jr., sales manager of the Tar Products Division of Koppers Co., Inc., Pittsburgh 19, Pa., announces that S. J. Katz has been named manager of Pacific coast district sales.

Mr. Katz joined Koppers in 1921 as a chemist in the St. Louis plant of the Division. For the past two years he was assistant district sales manager, and prior to that, assistant manager of the Division's Midwest sales district at Chicago.

Mr. Katz's headquarters had been at 390 Ninth Street, San Francisco, Calif. After Sept. 1st, his office was moved to the new district headquarters, 727 E. Gage Ave., Los Angeles.

Power Mower Market Expands

The post-war period has been notable for its tremendous growth in the power mower field, and all signs indicate that this growth will continue. This opinion was expressed by O. T. Jacobsen, president of the Jacobsen Mfg. Co., Racine, Wisc., at a recent sales meeting of its organization and that of its affiliated companies. These include the Johnston Lawn Mower Corp., Ottumwa, Iowa, and the Worthington Mower Co., Shroudsburg, Pa. M. J. Walker is director of sales of the organization.

A second significant development was the acceptance of the rotary disc mower. This was pointed out by H. G. Sanborn, Jr., general manager of the Worthington Mower Co., who reviewed the growth of rotary disc mower sales.

The Johnston meeting was conducted under the direction of D. W. Bailey, sales manager, and the Worthington meeting was under the direction of H. J. Pine, Jr., Worthington sales manager.

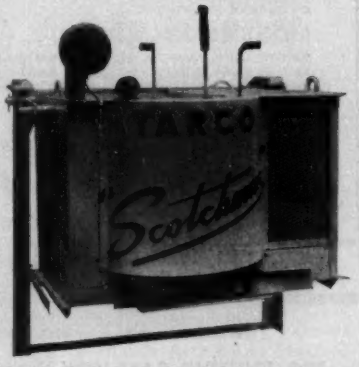
Advancement

Robert W. Hunt Co., Engineers, 175 W. Jackson Blvd., Chicago 4, Ill., announces that L. F. Bross has been advanced to manager of its Rail and Track Fastenings Department. A. A. Bareuther, whom Mr. Bross succeeds, is on leave of absence due to his health.

YOU *be the* JUDGE

Will your Salt Spreader

1. Apply de-icing salts uniformly in an even "bird-shot" melting pattern in any width from 4 to 30 ft.? No bare spots; no streaks?
2. Be self-leveling so you can run bulk salt into it from an elevated dump body?
3. Be adjustable for height?
4. Have ALL vital parts made of stainless steel—including the material hopper?
5. Have its engine AND engine controls completely enclosed in a weather tight compartment?



The "Scotchman's" proven air-blast method of spreading salt in a perfect light, uniform "bird-shot" pattern does NOT grind or pulverize your salt into a useless powder.

A DEPENDABLE, STAINLESS STEEL, ELECTRIC SELF-STARTING "Scotchman" is still the most efficient spreader of de-icing salts — bar none!

Booth B-5, Public Works Equipment Show Sept. 16-19, Detroit

TARRANT MFG. CO., East Ave., Saratoga Springs, N. Y.

Air Curtain Guide Plates

For Perfect Traffic Lines:

AIR CURTAINS, basic feature of all Kelly-Creswell Equipment, make possible the application of clean-cut, attractive lines without coming in contact with the surface.

Special striping guns by DeVilbiss, air actuated traction and pressure-cleaning equipment also feature K-C equipment. These are the reasons why more Highway-Zone-marking material is applied through K-C equipment than through any other make.

TRUCK-MOUNTED AND PORTABLE EQUIPMENT AVAILABLE.

There is a Kelly-Creswell Model that will solve your zone-marking problems.

KELLY-CRESWELL CO., Xenia, Ohio

MORE!
WITH
PAK-MOR
REFUSE COLLECTION UNITS

MORE CAPACITY . . . The packing and compressing of refuse makes possible twice the load normally carried. Pak-Mor refuse collection units are available in 9, 12 and 15-yard capacities.

MORE SANITARY . . . The all-enclosed cylinder prevents loose papers and trash from blowing out. The all-welded construction permits quick and easy cleaning of the interior.

MORE ECONOMICAL . . . The PAK-MOR Refuse Units cover a regular route more quickly due to increased capacity and ease of handling. This means fewer trucks, fewer trips and MORE savings! Units mount on speedy, highly maneuverable 1½ and 2-ton trucks.

★ AVAILABLE IN 4 CAPACITIES
★ UNLOADS AT ANY ANGLE
★ WIDE OPENINGS—EASY TO LOAD
★ TROUBLE-FREE OPERATION
★ SAVES MAN-HOURS AND DOLLARS!

WRITE FOR COMPLETE INFORMATION

Visit Our Exhibit at the American Public Works Association Convention in Detroit, Sept. 16 to 19

PAK-MOR MANUFACTURNG CO.
LOOP 13 & ROOSEVELT AVE. ★ P. O. BOX 6147 ★ SAN ANTONIO, TEXAS

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured *No Large Bell-holes to Dig*
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years ● Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY
Girard Trust Co., Bldg., Philadelphia 2, Pa.

CUT *YOUR* SWEEPING COSTS *75%*
Wilshire POWER SWEEPER

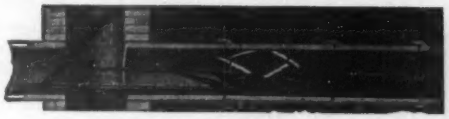
Picks up everything from cigarette butts to pop bottles in one easy operation! Write today for dealer nearest you and **FREE on-Your-Job DEMONSTRATION.**

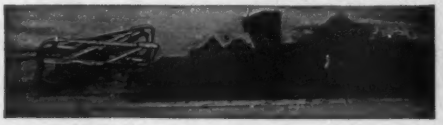
For dealer nearest you, write Dept. C-9.

Wilshire
POWER SWEEPER CO.
526 W. Chevy Chase Drive
Glendale 4 Calif

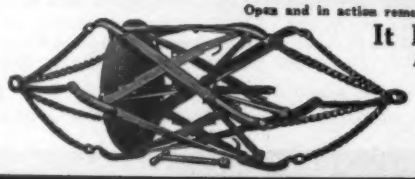
Sweeping the Country since 1940!

EXPANDING ROOT CUTTER & SEWER CLEANER





Open and in action removing roots and caked sediment like this.



It Fits in on Every Sewer Cleaning Job

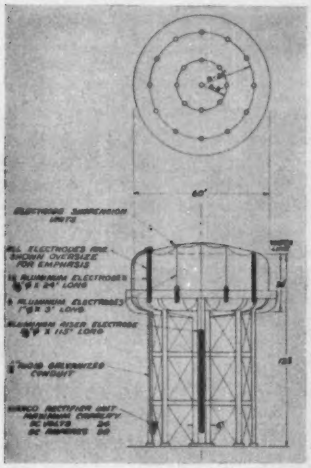
Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. Nappanee, Ind.

Cathodic Protection Stops Corrosion of Pipe Lines



Corrosion prevented by cathodic protection is depicted in this diagram.

The Harco Corp., 16907 Broadway, Cleveland, Ohio, reports the extension of its services to include the complete engineering, design, and installation of cathodic protection devices which will substantially increase the working life of underground pipe lines, water storage tanks, lead sheathed cable, flocculators, and clarifiers.

All Harco installations utilize especially designed oil-immersed selenium rectifiers and ground anodes and backfill materials manufactured specifically for these applications. Anodes of graphite, carbon, zinc, magnesium, platinum, aluminum, steel or steel alloys are specified according to the requirements of each installation.

Cathodic protection, as engineered by Harco, eliminates corrosion in most instances up to 100%. According to the company, results of the installation of correct corrosion control systems include lower maintenance costs, reduction of "down" time, elimination of the use of excess material for "corrosion factor," lower depreciation rates, and greater protection against personal and property damage from hazards resulting from corrosion.

Pre-Timed Traffic Control

The G-E expansible Type F controller is universally applicable in the field of pre-timed traffic control, interconnected or non-interconnected. Simple addition of dial units and relays adapts the control to more complex traffic problems as the need arises.

Unitized construction of the timer and its dial units makes it easy to expand, install and maintain the Type F Controller. Moreover, simplified design and precision-built parts assure long, trouble-free life.

The dial units, flasher, and other major assemblies are jack-mounted for expansibility and accessibility. Many communities are using the Type F Controller for flexible traffic direction.

Bulletin GEA-5481 describes the equipment in detail. It is issued by the General Electric Co., Schenectady, N. Y.

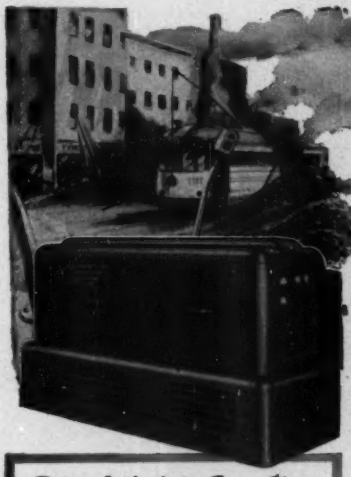
Retires from Allis-Chalmers

After 50 years of service, L. A. Watts retired as manager of the service and erection section of the Allis-Chalmers General Machinery Division, effective Sept. 1, according to an announcement by J. F. Roberts, director of engineering of the division, Milwaukee, Wis.

Mr. Watts, who will remain with the company on special assignment until early in 1952, has supervised the servicing and erection of much of the firm's heavy machinery, including some of the largest hydro-electric plants in the United States and Japan.

C. B. Smith, superintendent of service and erection of the Atlantic district since 1941, has been named successor to Mr. Watts. He has been with Allis-Chalmers since 1929.

C. P. Suykerbuyk, who has been attached to the Los Angeles district office as a special engineer since 1944, succeeds Mr. Smith at Atlanta. Mr. Suykerbuyk entered Allis-Chalmers employ in 1942.



ONAN
Emergency
Electric Plants
for
Civil Defense

No matter what happens to central station power during a bombing attack, electricity for essential defense needs is always available with Onan Electric Plants. Onan units, mounted on truck or trailer, or carried in the trunk of a car, can be rushed to any point where power and light are needed. Sturdy and dependable, Onan Electric Plants are an important link in a city's defense against disasters of any kind.

Write for folder

Onan PRODUCTS

D. W. ONAN & SONS INC.

7643 UNIVERSITY AVE., MINNEAPOLIS, MINN.

Surfa-slick
Patent Applied for

SELF-HEATING
ASPHALT
SMOOTHING IRON

Municipalities! This lightweight, rugged, simple, time and money saving smoothing iron will pay for itself in a few days' use.

HOT
IN TEN MINUTES
HOT
ALL DAY LONG

- RUGGED
- ECONOMICAL
- SIMPLE
- LABOR SAVING
- SAFE
- COMPACT

Dealer inquiries requested

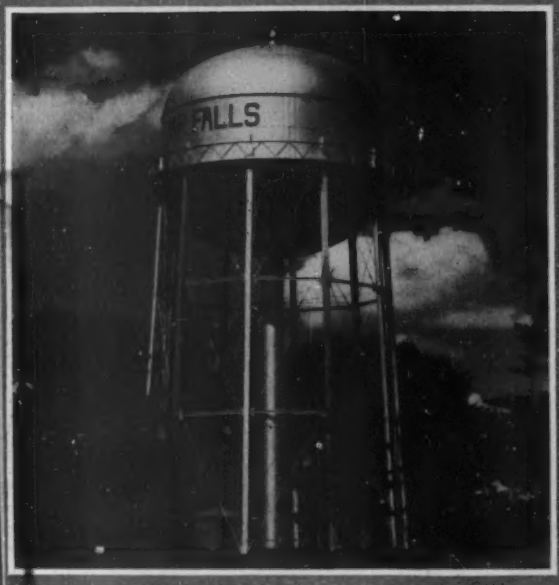
No more building and tending fires on your asphalt jobs!

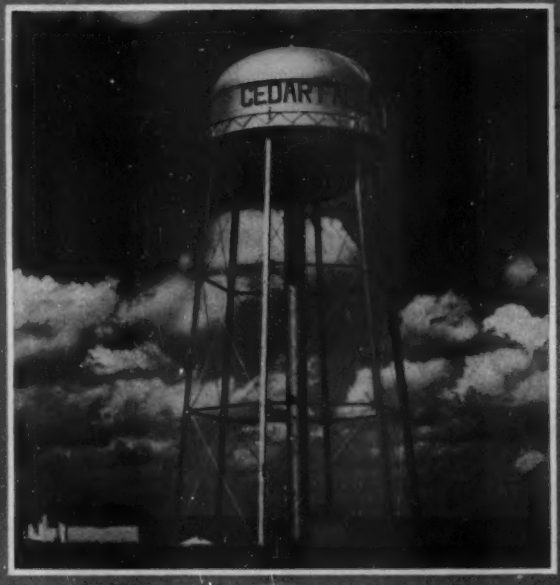
J. E. WOODS MFG. CO.
1516 First St., San Fernando, Cal.

HERE'S WHERE BETTER WATER SERVICE *Begins*

for Cedar Falls, Iowa

PITTSBURGH • DES MOINES





Elevated Steel Tanks

Dependable water supply, at uniform pressures around the clock, is assured for Cedar Falls, Iowa, by these Pittsburgh-Des Moines Elevated Steel Tanks.

Located strategically for balanced distribution in the water system, both tanks are of Double-ellipsoidal design. The unit shown at left has a capacity of 500,000 gallons, and a tower height of 68'4". The second tank holds 250,000 gallons, on a tower 87'7" high.

• • •

Do you have a copy of our comprehensive Elevated Tank Catalog? It is free on request—a most useful publication.

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

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NEW YORK (7) . . . Room 915, 270 Broadway
CHICAGO (3), 1216 First National Bank Bldg.
DES MOINES (8), 913 Tuttle Street
DALLAS (1), 1217 Praetorian Bldg.
SEATTLE . . . . . 920 Lane Street
SANTA CLARA, CAL. . . . . 619 Alviso Road

Catalogs for You

Write directly to the manufacturers, or use coupon on page 25

(Continued from page 34)

Wet-Water Penetrant Effectively Fights Fires

884 UNOX Penetrant-Wet Water is an effective agent for fighting fires. According to the Carbide and Carbon Chemicals Co., Corp., 30 E. 42nd St., New York, N. Y. This Wet Water will do 3 or 4 times more fire fighting than plain water. The company's 16 mm. sound-color film, *Fire Fighting with Wetter Water*, may be borrowed for use, free of charge.

For Construction, Repairing and Lining

885 Gunite, manufactured by the Pressure Concrete Co., of Newark 5, N. J., can be employed for repairing reservoirs, dams, sewage-disposal plants, for lining swimming pools, tunnels, sewers and irrigation ditches, and for constructing prestressed tanks, stacks, piles, side walls, and roofs. Write for 48-page illustrated booklet showing Gunite at work.

Water Gate Valves

886 Rensselaer double disc gate valves for water works may be obtained in sizes of 10 inches and larger. They have solid bronze wedges for smoother and more positive closing and opening. The Rensselaer wedge eliminates dragging and means easy lifting. Interchangeability of parts insures low maintenance costs. Further information may be had from the Rensselaer Valve Co., Troy, N. Y.

Tamping-Leveling Finisher For Street Construction

887 The Barber-Greene tamping-leveling finisher, Model 879-A, lays a smooth, level surface for paving streets, highways, runways, parking lots, and tennis courts. The B-G Finisher is two separate units, the tractor unit and the screed unit. Get your folder describing the equipment from Barber Greene Co., Aurora, Ill.

For Refuse Collection

888 The costs of refuse collection are substantially reduced and unsanitary conditions eliminated when municipalities employ Gar Wood Load-Packers, reports the Gar Wood Industries, Inc., Wayne Division, Wayne, Mich., in issuing its latest literature on its equipment. Among the machine's features are: two simple controls, automatic overload protection, low loading height, and compressing the greatest amount of refuse into the smallest space.

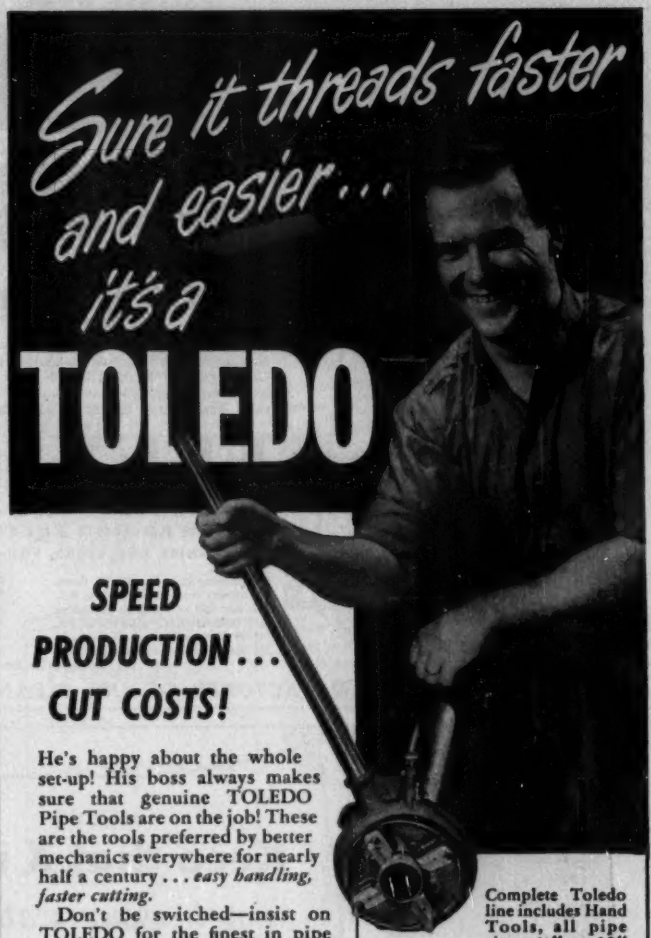
Economical Snow Clearance

889 For economical and efficient snow clearance, the Sicard Snow Master Junior with its new feature, the fluid drive, is within reach of small budgets of municipalities. According to Sicard Industries, Inc., 753 W. Main St., Watertown, N. Y., the machine is ideal for many cities, towns, smaller communities, and large industrial plants. Its 100-inch wheelbase makes it highly maneuverable, and its sturdy four-wheel drive gives it positive traction in the heaviest snow and slush.

Mechanical Rack Rake For Water-Works Use

890 A power-operated rake for cleaning trash racks at water intakes for hydroelectric plants, pumping stations, canals, and steam plants, is manufactured by the Newport News Shipbuilding and Dry Dock Co., of Newport News, Va. The mechanical rack rake cleans the rack bars of trash. Its operation reduces a former major hand operation to one of minor periodic activity. Available on request is a descriptive rack rake catalog which reports on the equipment in detail.

(See p. 209 for more bulletins)

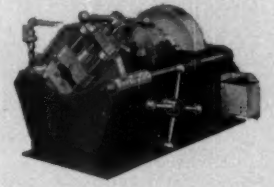


SPEED PRODUCTION... CUT COSTS!

He's happy about the whole set-up! His boss always makes sure that genuine TOLEDO Pipe Tools are on the job! These are the tools preferred by better mechanics everywhere for nearly half a century... *easy handling, faster cutting.*

Don't be switched—insist on TOLEDO for the finest in pipe threading and cutting tools and power machines! See how quickly Toledo dies take hold... how easily they cut smooth, accurate threads. Check the many advanced features of Toledo Pipe Tools... designed to speed the work and assure fast make-up and trouble-free joints. You'll be better satisfied with Toledo dependability! Write for catalog. The Toledo Pipe Threading Machine Co., Toledo, Ohio. New York Office: 165 Broadway, Room 1310.

Complete Toledo line includes Hand Tools, all pipe sizes, ⅛" to 12" and ¼" to 1" bolts. Power pipe machines, up to 2" and 4" capacity. (Above)—Toledo No. 1R Threader, 1" to 2" pipe.



Toledo #999 2" pipe machine, wheel or knife cut-off.

RELY ON THE LEADER

TOLEDO

PIPE TOOLS... POWER PIPE MACHINES... POWER DRIVES

95% OF AMERICA'S LARGE CITIES

85% OF AMERICA'S MEDIUM CITIES

70% OF AMERICA'S SMALL CITIES

Use **"FLEXIBLES"** *Exclusively*

Since we started *"getting the men out of the sewer holes"*... eliminating hard digging and unsanitary working conditions 18 years ago..."**FLEXIBLES**" have saved many a man's life and greatly improved both sanitary and sewer pipe protection! You cannot afford to be without "**FLEXIBLES!**"

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9059 VENICE BOULEVARD, LOS ANGELES 34, CALIF.

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200 Magee Bldg. — Pittsburgh, Penn.
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29 Cordon Avenue — Roslindale 31, Mass.
801 E. Excelsior Blvd. — Hopkins, Minn.
3786 Durango St. — Los Angeles 34, Calif.
4455 S.E. 24th Street — Portland, Oregon
Francis Hankin — Montreal & Toronto, Can.
351 West Jefferson Blvd. — Dallas, Texas

AMERICA'S LARGEST MANUFACTURER OF PIPE CLEANING TOOLS & EQUIPMENT

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REPRESENTATIVES IN THE FOLLOWING CITIES:

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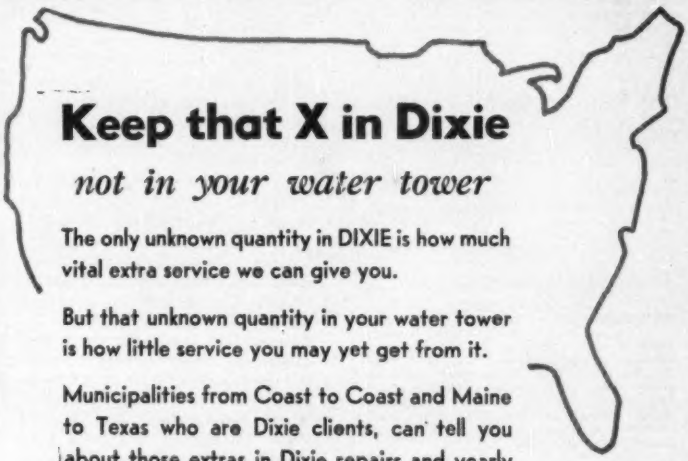
SYRACUSE, N. Y. . . . . Box No. 881
BUTTE, MONTANA . . . . . Box No. 383
GREENVILLE, S. C. . . . . Box No. 1074
TAMPA, FLORIDA . . . . . Box No. 1642
RICHMOND, VA. . . . . Box No. 886
NEWARK, OHIO . . . . . Box No. 623
FARGO, N. D. . . . . Box No. 1472
COLUMBIA, S. C. . . . . Box No. 472
DALLAS, TEXAS . . . . . Box No. 1881
DENVER, COLO. . . . . Box No. 2037
WAUSAU, WISCONSIN . . . Box No. 682
SAN FRANCISCO, CAL. . . Box No. 1445
COLUMBIA, MO. . . . . Box No. 522
SPOKANE, WASH. . . . . Box No. 906
MACON, GEORGIA . . . . . Box No. 402
PROVIDENCE, R. I. . . . . Box No. 202



Keep that X in Dixie

not in your water tower

The only unknown quantity in DIXIE is how much vital extra service we can give you.

But that unknown quantity in your water tower is how little service you may yet get from it.

Municipalities from Coast to Coast and Maine to Texas who are Dixie clients, can tell you about those extras in Dixie repairs and yearly inspections.

Don't let it drift longer, but write us now

Thirty-three years of Nationwide Experience

DIXIE TANK & BRIDGE CO.

3523 Lamar Ave. **P. O. Box 14** **Memphis 1, Tenn.**

Other Catalogs

(Continued from page 207)

Write directly to the manufacturers, or use coupon on page 25

Hydrogen Zeolite Water Softeners

891 The Cochrane Corp., Philadelphia 32, Pa., manufacturer of water conditioning equipment and steam specialties, has issued a new publication, No. 4530, on Cochrane Hydrogen Zeolite (Cation Exchange) Softeners. The 16-page bulletin gives a complete description of the process and the field of application, showing the advantage of Hydrogen Zeolite Softening, and its relation to the Sodium Zeolite Softening process.

New Lifting-Loading Boom

892 A new heavy-duty boom, designed especially for lifting and loading with its 5-ton truck-mounted Bantam shovel-crane, is announced by the Schield-Bantam Co., Waverly, Ia. Available in 25-foot length, with 5-foot 3 extensions, the new Bantam boom has approximately 4 times more rigidity than standard booms due to use of heavier reinforcing and bracing to resist shock and sling load conditions. It is especially adaptable to pipe handling, steel erection, and handling industrial materials.

Fire Truck Features Improved Ladder Locks

893 The Seagrave fire truck features improved ladder locks which are released by the flip of a lever. Manufactured by The Seagrave Corp., Columbus, Ohio, and Bickle-Seagrave, Ltd., Woodstock, Ont., the machine has many other advantages among which are: flush, sealed beam headlights, improved suction hose clamps, centralized drain control, and improved ball type pump discharge with locking control handles.

Porcelain Enamel Street Signs

894 Ferro porcelain enamel signs are made of finest quality steel, deeply embossed, and finished in brilliant, permanent porcelain enamel. The manufacturer, the Ferro Enameling Co., 1100 57th Ave., Oakland 3, Calif., reports that it has territories open for active selling agents.

Water-Meter Boxes For Any Temperature

895 The Clark line of water-meter boxes, available in a wide selection of size and style, is suited for efficient service in any temperature zone, states the manufacturer the H. W. Clark Co., Mattoon, Ill. The Clark meter box not only guards the water meter from frost and unauthorized individuals, but also makes quick and accurate reading possible. For milder climates, the Clark Southland meter boxes are well adapted to one's needs.

No Problems with These Fire Hydrants

896 The Kennedy Valve Mfg. Co., Elmira, N. Y., reports that its hydrant, the Kennedy Safetop, is the only hydrant with the threaded breaking ring that gives positive connection and rigid alignment of the two standpipe sections. There is no need for digging because breakage is all above the ground and no flooding because compression-type valve closes with water pressure. Write for Safetop Bulletin 105.

(See p. 211 for more bulletins)

IT'S NEW!

IT'S DISSTON!

IT'S THE BEST IN LIGHT-WEIGHT SAWS!

Here is a new model of an old woods favorite—the tough, light-weight DO-101 Disston One-Man Chain Saw. It has a sturdier crankshaft, a reinforced rear handle, new rapid-action toggle stop-switch and many other advanced features for harder use and longer life. And, for smoother, faster cutting, the DO-101 is equipped with Disston's new fast-cutting "DF" chain. Running on a narrow profile slotted guide rail, this chain cuts a kerf that minimizes binding. Can be sharpened by hand on the rail in a matter of minutes.

Don't take our word that a Disston is just about the finest cutting tool that's ever come your way. Ask anyone who has ever handled a Disston. Then see your Disston Dealer. He'll let you try out one of these beauties for yourself. Once you feel that steady power safely under your command and effortlessly guide the chain through a cut, you won't rest until you own one of these time-saving money-makers yourself.

Don't forget, Disston also makes the powerful DH-120 12-hp Two-Man Extra Duty Chain Saw . . . a favorite the world over.

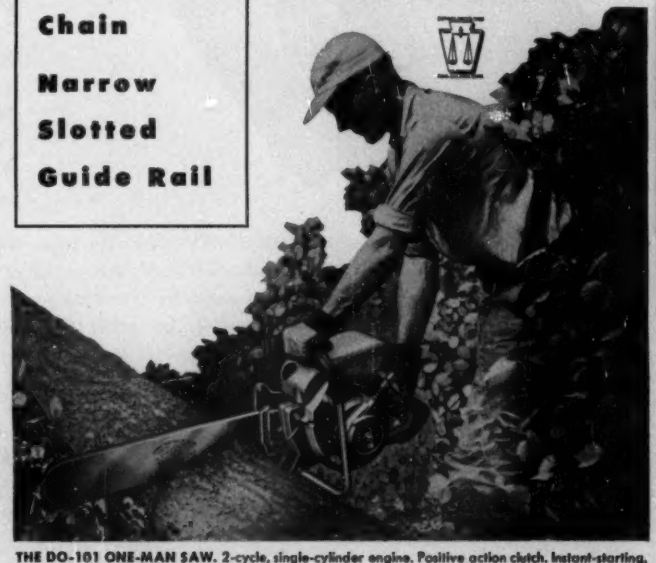
Featuring—
New,
Fast-Cutting
Chain
Narrow
Slotted
Guide Rail

FIGHT WASTE

A tip for present Disston Saw Owners . . .

Follow the simple FIGHT WASTE preventive maintenance instructions which are available to you free of charge. Send for the valuable check-up charts, the illustrated maintenance folder, the detailed handbooks. Above all, rely on the services of your Disston Dealer.

HENRY DISSTON & SONS, INC.
1-11 TACONY, PHILADELPHIA 35, PA., U.S.A.
In Canada, write: 2-20 Fraser Ave., Toronto 3, Ont.



THE DO-101 ONE-MAN SAW. 2-cycle, single-cylinder engine. Positive action clutch. Instant-starting, self-rewinding Magnapull Starter. Automatic chain lubricator. Fast-cutting "DF" chain and slotted profile guide rail in 20", 28", 32", 36", 40" lengths. Also available are 18" and 24" rails with straddle type chain and 15" bow saw for speedy bucking and limbing. Helper handle available for two-man operation.

Fast .... Accurate .... Economical

The new system and the machines have greatly improved our efficiency and have facilitated getting the tax rolls to the Tax Collector more promptly, in neater form, with a greater degree of accuracy, and with fewer people.

The above sums up results of the new Ventura County, Calif., tax system which is now making 115,000 tax extensions affecting 40,000 tax bills. Special features which the accounting machines had to meet included:

two real estate valuation figures with total

personal valuation and exemptions

several different district tax rates

automatic extension of taxes

two tax installments

several assessment taxes to be correctly applied

furnish sheet totals of valuations, each installment, and each special tax

record of tax payments by districts

taxes due in each district daily

Underwood Sundstrand Tax Computing Machine was able to meet all those requirements in less time and with half the people. Underwood Sundstrand Accounting Machines are also used by counties and municipalities for appropriations accounting, payroll work, inventory records and utility billing as well as in modern tax billing and posting.

Let us send you the particulars.

UNDERWOOD CORPORATION

Accounting Machines . . . Typewriters . . . Adding Machines . . . Ribbons, Carbon Papers and other Supplies

One Park Avenue — **New York 16, N. Y.**

Sales and Service Everywhere

This page means SERVICE . . .

With a Smile

That is, if you need information on any manufacturer's products, whether mentioned or not in this issue of THE AMERICAN CITY, we will procure it for you free of charge.

If you need such information, use this business reply card. It needs no stamp. Just drop it in the mail.

See reverse side

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No Postage Stamp Necessary If Mailed in the United States

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THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

Catalog Supply Dept. NEW YORK 16, N. Y.

Free Catalog Supply Service

For readers of THE AMERICAN CITY

When checking equipment in this issue of THE AMERICAN CITY, your attention is directed to these sections:

1. The catalog listings, to be found on pages 25, 27, 29, 30, 32 and 34, 207, 209 and 211. Each listing has a number. Write the numbers of the catalogs you wish to receive on the reply card below.

2. The "Municipal Purchasing News" section, pages 187 through 233, where descriptions and illustrations of equipment and services are to be found. If you need additional information on any of these, jot down on the card the name of the product and its manufacturer.

In addition, should there be equipment not mentioned in this issue about which you would like information—such as manufacturer's name, source of supply, etc.—make your inquiry on the card. We'll do the rest.

To THE AMERICAN CITY's Catalog Supply Department.

Please send literature on items numbered as follows, starting on page 25:

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Please send me further information on the following products described in this issue:

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I would like to receive the manufacturers' booklets on.....

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NAME .....

TITLE .....

ADDRESS .....

..... 8-51

Fill in the attached card—tear off along dotted lines, and drop in mail-box.

More Literature

(*Continued from page 209*)

Write directly to the manufacturers, or use coupon on page 25

Aerial Photogrammetry Speeds Map-Making Needs

897 Photogrammetry for taxation and city planning purposes is offered by Jack Ammann, photogrammetric engineers, 829-31 No. St. Mary's St., San Antonio, Texas, and 34 Webster Ave., Manhasset, N. Y. The company issues topographic maps and precise aerial mosaics for such uses as tax maps, city and regional zoning and planning, defence location studies, and airport location and construction. Complete details of its services are described in a booklet entitled, *Air Speeds to Your Map Needs.*

For Water Level Control, Employ These Float Valves

898 Golden-Anderson "Cushioned" float valves give dependable high and low-pressure water level control, reports the Golden Anderson Valve Specialty Co., 2093 Keenan Bldg., Pittsburgh 22, Pa. They may be of either the quick-opening or throttling design with integral or remote pilot control, available in angle or globe body pattern. The special air and water cushioning feature prevents any chatter or bang.

To Make Batteries Last Longer

899 Battery AD-X2 is a white powder packaged three envelopes per treatment package. Each envelope contains sufficient Battery AD-X2 to treat one cell of a Group 1 or 2 automotive-type lead-acid battery. The powder is claimed to extend the life expectancy of mechanically sound lead-acid batteries. For free 12-page illustrated booklet, write to Pioneers, Inc., 2411 Grove St., Oakland 12, Calif.

External Heating Of Sewage Sludge

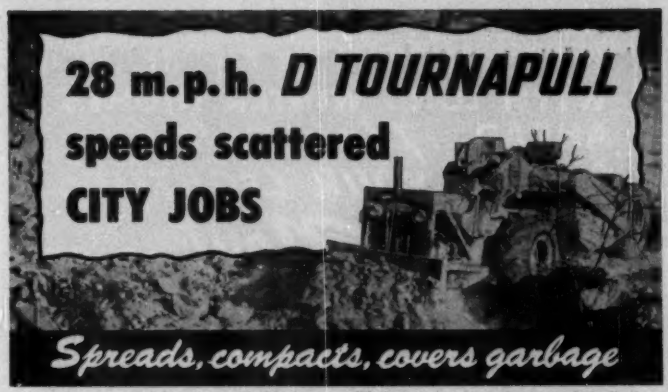
900 Bulletin No. 235, covering *P.F.T. Digester Heater and Heat Exchanger*, for controlled sewage digestion, is issued by the Pacific Flush Tank Co., 4241 Ravenswood Ave., Chicago 13, Ill. Among the subjects covered on external heating of sewage sludge are: Effective Digester Heating, Importance of Temperature Control, Description of the Heater and Heat Exchanger, Accessory Group Controls, Digester Recirculation Rate, and Lists of Installations Available. Some of the P.F.T. waste treatment equipment includes floating covers for digesters, supernatant selectors and gauges, cover position indicators, and gas safety equipment.

Fire Mask Provides Sufficient Fresh Air

901 Sufficient fresh air is provided for fire fighters by the Scott Air-Pak manufactured by the Scott Aviation Corp., 191 Erie St., Lancaster, N. Y. It protects firemen from all toxic fumes, and protects lungs and eyes so that work can be accomplished efficiently and comfortably. Among its features are the guard on the cylinder valve, quick-action harness, and elimination of cannisters.

Air-Raid Sirens

902 Federal Enterprises, Inc. (formerly Federal Electric Co., Inc.), 8756 S. State St., Chicago 19, Ill., announces issuance of Bulletin No. 95 which describes its air-raid signal equipment. The manufacturer points out that the effective air-raid system is one which blankets every area completely with ample and unmistakable penetrating sound waves. Available are 2, 5, or 7½-hp sirens.



As garbage is trucked in, versatile 122 h.p. Tournapull, with Bulldozer blade, spreads and dozes it into place on city landfill disposal dump. Machine's normal travel, on big rubber tires, back and forth in trench, solidly compacts refuse. Garbage is sanitary-sealed by: (1) dozing dirt down from trench walls, or (2) hauling in dirt as Tournapull excavates next parallel disposal ditch. On extra jobs, 28 m.p.h. mobility on rubber lets Tournapull drive anywhere, any time, over city streets ... no waiting for trucks, no loading delays.

Grades city streets, subdivisions

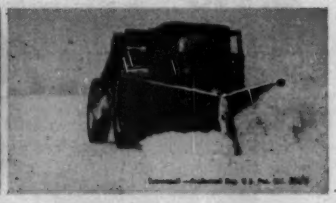
Working at Royal Oak, Mich., D Tournapull moved 25,000 yds. grading streets and leveling subdivision site. On 300′ to 500′ one-way hauls, rig self-loaded 6½ loose yards in 1 min., delivered an ave. of 20 loads per hour. One-man operation cuts costs.

Handles maintenance jobs

Fleet of 3 Tournapulls handled 4 jobs 55 miles apart near Madison, Wis. ... all in 6 days. On work-and-run schedule, high-speed "D's" (1) cleaned drainage ditches, (2) graded village streets, (3) filled mud holes with sandy gravel, and (4) prepared sub-base for new grade.

Widens, straightens roads

Widening and straightening 2 miles of heavily-traveled Lake Shore road in Cleveland, Ohio, two 7-yd. "D's" moved 50 loads of sandy top soil 350 ft. hourly. Soft-cushion tires and excellent maneuverability permitted working over pavement without interrupting traffic.



In winter, plows, removes snow

Tournapull works year 'round. Working at 20° below zero at Cooperstown, N. D., this "D" plowed through 2 to 6-foot crusted drifts, at speeds ranging from 6 to 11 m.p.h. During summer, rig handles road maintenance, digs drains, trenches, water reservoirs, etc.

Ask your LeTourneau Distributor for complete facts

Mail Today to: R. G. LeTOURNEAU, Inc., Peoria, Illinois

Please send us more information on 28 m.p.h. D Tournapull to be used for:

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TITLE.....

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CITY, STATE.....

LeTOURNEAU TOURNAPULLS

MORE WORK PER HOUR WITH RUBBER-TIRED POWER

WITH LONG WINTER NIGHTS AHEAD... *Play Safe!*

Improve YOUR LIGHTING *Now*

REDUCE TRAFFIC ACCIDENTS

Good lighting earns more than it costs! REVERE Engineers, constantly on the alert toward saving lives, and dollars, have developed safety-island illumination to a degree that has won commendation of the nation's Safety Engineers. Two types are offered—consisting of Steel Standards of studied heights to properly illuminate the bumper and furnish obstruction lights that can readily be seen by the motorist.

Revere ELECTRIC MFG. CO.

SAFETY ISLAND UNITS SOLVE SAFETY PROBLEM

No. 862 has an auxiliary spotlight to illuminate the traffic officer's station. Provides greater safety to pedestrians, as well as to the motorist.

OTHER Revere CREATIONS

No. 851

WHITEWAY PYLON-LITES

give boulevards and business streets that "GRAND LOOK"

SINGLE AND DOUBLE ARM ONE-PIECE STEEL STANDARDS

LOOK TO REVERE FOR ALL YOUR LIGHTING NEEDS— LUMINAIRES STANDARDS REGULATORS TRANSFORMERS and CONTROLS— SPORTS and PLAYGROUND LIGHTING.

WRITE FOR COMPLETE DATA

Protective Lighting

REVERE wide-angle floodlights, incandescent searchlights and long-range floods effectively protect public buildings, bridges and other vulnerable areas.

Write for Special Literature

REVERE ELECTRIC MFG. CO.

Indoor and Outdoor Lighting Equipment for Every Need

6015 BROADWAY CHICAGO 40, ILL.

The American City and the Department of State

Now and then the AMERICAN CITY is asked by the U. S. Department of State for permission to translate and republish certain of our articles for distribution by State Department missions throughout the world.

The most recent was the story on inspection of elevated water tanks by J. O. Jackson of Pittsburgh - Des Moines Steel Co.

Some previous requests included articles on sewerage and sewage treatment, playgrounds, and city planning.

We always appreciate these requests. We know that the world wants to be fed better, clothed better, sheltered better. We are glad our articles show that people can get these benefits more abundantly when they are free, than when forced to live in a police state.

We greatly appreciate being able to help proclaim the practical side of a free democracy.

This appreciation THE AMERICAN CITY shares with our authors, contributors, subscribers, and advertisers—who, combined, make the magazine possible.

Truck-Mounted Drag Shovel

The Hydrohoe, a completely hydraulic truck-mounted drag-shovel, has just been announced by Bucyrus-Erie Co., South Milwaukee, Wisc. This unit has features according to the manufacturer which make trenching and other specialized digging faster and easier. These include two separate digging actions; precision control permitting fraction-of-inch movements; hydraulic ejector on dipper; no bails, sheave blocks or drag ropes on the bucket to interfere with loading; and rapid conversion to clamshell or crane in the field.

Force for the machine's primary digging action is applied by a hydraulic ram located between the boom and the dipper handle. A second, separate and distinct digging motion comes from the telescoping of the boom. By hydraulically extending and retracting the boom, the operator reportedly makes a level, scallop-free cut, digs across pipe and buries cable, excavates in front of and behind boulders to roll them free—all without moving the machine. The manufacturer reports that test data indicates this telescoping feature saves up to 40% of time usually lost moving up.

Exceptionally precise digging is possible through the use of this new drag-hoe.

This machine, capable of traveling at speeds of 50 mph on open highways, is especially suited to the needs of municipalities, on widely scattered, short-term jobs, the manufacturer states. It is easily converted in the field to clamshell or crane service.

Another distinct advantage, according to the manufacturer, is the hydraulic ejector built into the dipper. By pushing the load out with a positive forcing action, the ejector eliminates the jerking and jarring necessary to shed sticky material with a conventional bucket. This ejector makes possible the use of a narrow 12-inch bucket, a size normally impractical because of clogging.

The Hydrohoe is reported to work effectively to a 12½-foot depth over the rear of the truck and has a maximum reach of 23 feet. It is operated by the regular truck engine, furnishing power through a power take-off.

Sonar's new, compact VHF receiver, the smallest 9-tube machine available.

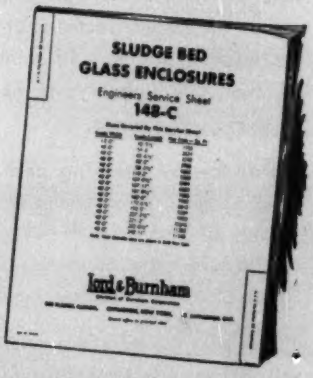
New Small Two-Way Radio

What is believed to be the smallest shockproof 9-tube VHF receiver ever offered for two-way radio communication is now being introduced by Sonar Radio Corp., 59 Myrtle Ave., Brooklyn 1, N. Y. The receiver employs the latest in VHF technique, and is built for either AM or FM and all frequencies from 27 to 173 m.c. When combined with Sonar's model MB-26 transmitter, complete two-way mobile communicator, is available for civilian defense, commercial and governmental use.

Engineers Service Sheets Available on

GLASS COVERS for SEWAGE TREATMENT PLANTS

Sludge beds, sprinkling filters, tanks or wherever a glass cover is needed.



Send for These Valuable Engineers Service Sheets

New set of six Engineers Service Sheets furnished on request. Contain details, specifications and recommendations to suit individual job requirements.

Lord & Burnham
DIVISION OF BURNHAM CORPORATION
IRVINGTON, N. Y. DES PLAINES, ILL.

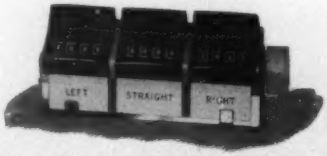
Typical Sludge Bed Glass Cover at the Stroudsburg, Pa., Sewage Treatment Plant.

You Need MORE Than *One Man* Traffic Control!

Traffic rules and regulations are the result of careful study, analysis and planning. There should be no "hit-or-miss" attempts at solving traffic control at busy street intersections, at the approaches to bridges and tunnels, and on crowded highways to and from terminals and airports.

Day-to-day checking and careful study of peak hours require tedious recording of many details—all of which can be quickly and accurately tabulated by use of a Traffic Control Denominator.

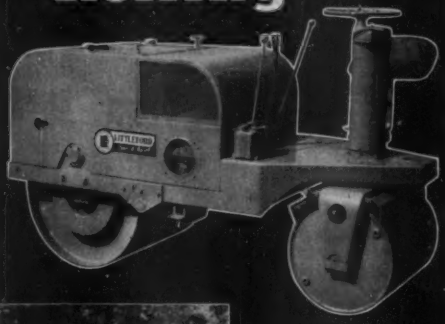
This easy-to-operate and moderately priced device is available in a single unit Hand Tally Denominator as well as in machines from one to 180 units—to meet your specific requirements.



Let The DENOMINATOR solve your traffic problems! For detailed information write Dept. 2-TC.

THE *Denominator Company*, INC.
261 BROADWAY, NEW YORK 7, N. Y.
Manufacturers of Tabulating Machines for over 35 years

For Low-Cost Rolling



Littleford's Model·157 Portable TRAIL-O-ROLLER

Here's the most modern 2 to 3 ton Portable Roller ever designed for rolling patches on Road Maintenance work, Tennis Courts, Bituminous Walkways, Parking Lots, Driveways, Drive In Theaters, Airport Runways or wherever compaction is needed. This Model 157 Trail-O-Roller with its variation in compaction is the utility work horse for Contractors, Highway Departments, Park Departments, Cities and Counties. Its Portability and the ease of changing from trailing to rolling or rolling to trailing position makes it the most desired Road Roller of modern times. No trailer is needed to move this Model 157 to and from jobs; it travels on its own pneumatic tired wheels. Rolling to Trailing Position or Trailing to Rolling Position is achieved by a Hydraulic Lift.

For low cost Rolling with a Modern Roller, this Model 157 Trail-O-Roller is the answer.

LB LITTLEFORD
BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE - 1930

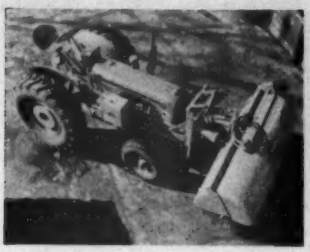
LITTLEFORD BROS., INC.
500 E. Pearl St., Cincinnati 2, Ohio

No Waste Time With This Tractor Sweeper

Everything is under control by the operator at his seat, with this flexible and powerful tractor-mounted sweeper. Its rugged design makes it particularly useful for cleaning airport runways, streets, sidewalks, parking lots and similar sites.

The sweeper has convenient, finger-tip hydraulic controls that start or stop broom rotation, regulate broom speed, or raise and lower the broom to exact height desired. Also, the operator can change the angle of sweeping from left to right by hydraulic controls.

The broom is quickly converted to snow-sweeping purposes by removing the standard dust shield and attaching the snow shield to the broom. Complete description and specifications can be obtained on this sweeper by writing the Lull Mfg. Co., 3612 E. 44th St., Minneapolis 6, Minn.



Flexible tractor sweeper

New Portable Traffic Signal

A new, portable traffic signal is being offered municipalities nationally by Henderize, Inc., 5667 Freeport Boulevard, Sacramento, Calif. According to Ray D. Henderson, president, the "Mechanical Cop" is now in mass production and priced at $695.

It is a self-contained unit, standing eight feet high and weighing only 290 pounds. It operates either on 110 volts or on a storage battery housed in the base, which provides enough power for 30 hours of continuous operation without charging. It has a built-in charger for continuous operation.

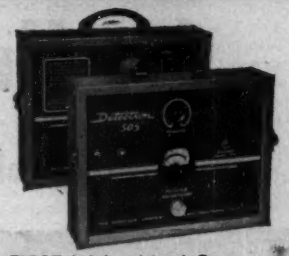
A man can roll a number of these signals into position along thoroughfares which do not ordinarily require permanent signal installations, or to accommodate peak traffic loads around shopping centers, drive-in theatres, military installations, industrial plants, football stadiums, race tracks, public auditoriums, baseball parks, and similar spots.

When a three-way control switch is thrown to the "left" position, the lights flash from green to amber to red in accordance with the National Code. When the switch is in "center" position, all lights are off. When the switch is thrown to the "right" position, the lights flash amber in one direction and red in intersecting directions.

Finger-tip operation of a knurled knob changes the complete lighting circuit from approximately 60 seconds to approximately 120 seconds, or to any desired setting in between. By turning another knob, the timing of the amber light can be changed from approximately two seconds to six seconds. A third knob controls the red and green lights for both directions. Turning the knob to the left lengthens the red light and shortens the green light for one direction, and at the same time shortens the red light and lengthens the green light in the intersecting direction. This accommodates a heavy flow of traffic on one street and a lighter flow of traffic through the intersecting street.

The new portable "Mechanical Cop"

Detectron 505
PIPE DETECTORS



FIRST With a Metal Case
FIRST With Shielded Loops
FIRST With "Sure Grip" Handle
FIRST With Lifetime Guarantee

The new DETECTRON Model 505 locates, traces and centers pipes and cables with speed and accuracy. Small, compact, lightweight — with HEAVY DUTY PERFORMANCE.

★ HIGHER QUALITY
★ LONGER LIFE ★ LOWER PRICE
TRIPLE VALUE!

For Complete Information Write for Folder 9-R

Eastern Representative
HATHAWAY SPECIALTIES CO.
BRADFORD, R. I.

THE Detectron CO.
5637 CAHUENGA BLVD NORTH HOLLYWOOD, CALIF

Centerlines take a beating but stay bright with "CATALITE"

paint · and · bead package for STREET and HIGHWAY STRIPING!

Literally millions of crystal clear reflective spheres embedded in a tough, highly reflective binder give matchless, all-weather performance. CATALITE is available in either "drop-on" or "premix". Send for information and low prices.

Cataphote Corporation
TOLEDO 10, OHIO

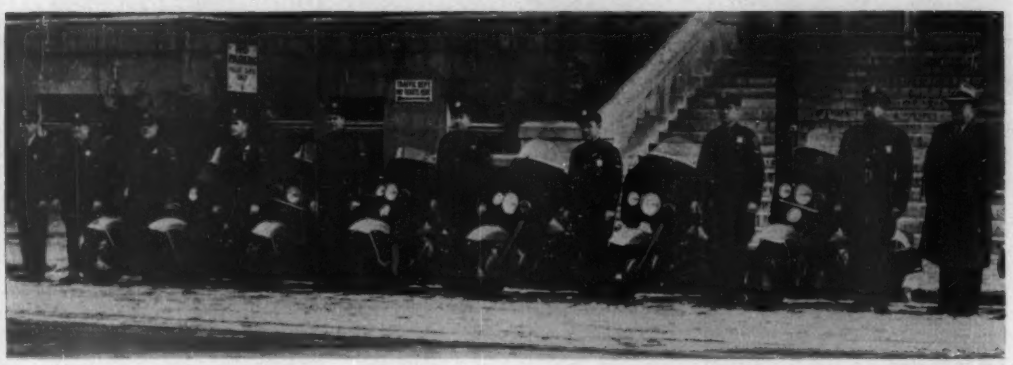
Please rush new FREE CATALITE descriptive pamphlet and prices of your three types of drop-on and also premix for street and highway safety striping. No obligation, of course,

Name_____
Title_____
City_____
State_____

MFRS. AGENTS INQUIRIES INVITED!

More Harley-Davidsons for Huntington, W. Va.

"Traffic violations must stop," says Police Chief



The augmented Huntington, W. Va., traffic squad, showing the 7 new Harley-Davidsons added to the squad. L. to r. are Sergeant Earl Duff, Officers N. P. Johnson, J. E. Triplett, Melvin Grobe, Charlie Miller, Fred Priddy, Paul Newlon, Robert Shy, Warren Fountain and Chief Whitten.

IN a continued effort to "crack down" on traffic violations, Huntington has increased its traffic detail to two shifts and added 7 new Harley-Davidsons. This gives the motorcycle squad a new strength of 13 machines and 14 officers. Radios have also been installed, and Chief Lon H. Whitten states that the city's traffic regulations will now be enforced "to the nth degree!"

In other communities throughout the country, traffic violation is also an ever-growing problem. And for its effective solution, more and more cities are increasing the strength of their traffic squads and adding more Harley-Davidsons.

Your city, likewise, can benefit from the use of more Harley-Davidsons. These big, powerful motorcycles are built especially for police work. Their easy handling, high acceleration, road-hugging stability, effortless steering, oil-cushioned riding ease and other features help the mounted officer do his duty more efficiently. Ask your dealer for complete information on the latest Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars, or write . . .

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wis.

POLICE MOTORCYCLE MANUAL

You'll find many helpful ideas for your traffic department, in this new, illustrated 16-page booklet. It's chock-full of information about police motorcycles and their use in law enforcement and accident prevention work. Your copy will be sent promptly on request. No obligation. Write today.

HARLEY-DAVIDSON

MOTORCYCLES POLICE BETTER TRAFFIC CONTROL **SERVI-CARS**

Summary Punched Cards Simplify Municipal Accounting

In punched-card accounting there are two types of basic record cards. There is the detail card carrying all the information regarding a certain item, such as an employee, and the summary card from which his weekly pay can be made up. In the case of force-accounting or day laborers, the detail card will have punched into it a distribution of the hours spent each day on each of the various jobs and the money amounts. Into the summary card will be punched the week's total hours worked and the amount earned. The payroll itself is run off from the summary cards.

The detail card is a record to refer to in case of a dispute. The summary card is used to write the payroll, make quarterly social security records, the withholding tax form W-2, the employee's earnings statement and record, and the payroll check. A new folder tells how these summary cards can be produced automatically as a by-product of the regular tabulating operation. Write for Booklet TM767 from Management Controls Division, Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.

One-Man Rotary Snow Plow

The removal of snow from sidewalks, driveways and other spots normally requiring hand labor becomes easy with a new, small one-man snow plow, according to Jari Products, Inc., 2938 Pillsbury Ave., Minneapolis, Minn., which announced the development of the JARI JR. rotary snow plow. The company claims that it will do more work in 10 minutes than one man with a shovel can do in an hour, and will outperform any blade-type plow in wet or slushy snow, or dry, packed snow.

This new plow makes sidewalk and driveway clearing easy.

The machine is a light, powerful, self-propelled rotary plow. The open front cuts a swath 16 inches wide and has a rotary rake to break up hard-packed or frozen snow. An adjustable casting chute directs the snow 15 feet or more to one side.

A 2-wheel drive has positive forward movement obtained by hardened steel pinions engaging notches in rubber tires. An independent clutch permits starting the 1½-hp gasoline engine without load, making winter starting easier.

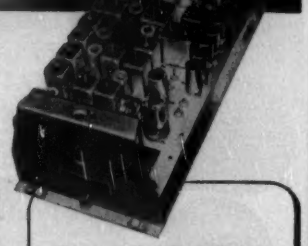
The complete machine crated weighs 157 pounds; uncrated, 129 pounds. The snow plow alone weighs 39 pounds and fits JARI JR. power units only.

Joslyn Sales Personnel

The Joslyn Mfg. and Supply Co., 3700 S. Morgan St., Chicago 9, Ill., announces the following changes in the location of sales personnel: Walter Armstrong has moved to Indianapolis to handle the Indiana territory; C. V. Miller is located in Jefferson, Wis., to cover a large portion of Wisconsin and Northern Illinois; Don Hamister will be located in St. Louis, Mo., and J. R. McGinley is situated at Cedar Rapids, to cover Iowa.

HERE'S TOP PERFORMANCE IN A SINGLE RADIO PACKAGE!

KAAR RADIOPAK



The four outstanding features for which Kaar equipment has long been noted have now been combined into a single mobile radio-telephone package that is far ahead in performance . . . yet competitive in price!

The Kaar RADIOPAK features ruggedness, simplicity of design, lowest battery drain, exceptional voice quality *plus* greater than ever stability and sensitivity, engineered selectivity that exceeds the standards set by FCC regulation — all in a single unit transmitter-receiver that is completely integrated for simplicity of installation, maintenance, and operation.

RADIOPAK is ideal for police, taxi, fire equipment, and trucking installations and is particularly suited for three-wheeled motorcycle use. *Don't be content with an ordinary radiotelephone system—specify RADIOPAK!*

Kaar RADIOPAK "in a nutshell":

FREQUENCY RANGE: 152-174 mc

POWER OUTPUT: 10-12 watts

BATTERY DRAIN: Standby 6½ amps; Transmitting, 15 amps

DIMENSIONS & WEIGHT: 6¼" high, 8" wide, 18½" long; 24 lbs.

STABILITY: Better than .005% for a 50° C temperature change with standard Type E crystals

SPURIOUS EMISSION: Down at least 70 db

SPURIOUS RESPONSE: Down over 85 db

SELECTIVITY: 100 db down at 60 kc off resonance

SENSITIVITY: 20 db quieting on less than ½ microvolt of signal

AUDIO RESPONSE: ±3 db from 180 to 3000 cycles

KAAR ENGINEERING CO. • Palo Alto, California

Trafficone SYSTEM of TRAFFIC CONTROL LEADS the NATION in Economy Efficiency Safety

say top traffic experts

"The Trafficone is the best engineered safety device I have seen in thirty years of traffic work . . ."

This statement was made by the Traffic Engineer of a large city. Severe tests throughout the country under the most critical conditions have proved *THIS IS A FACT.*

Overall height 40" (with adapter sign) Barricade Trafficone 28". Weight 6½ lbs.

"Guide the Motorist Don't Confuse Him"

SAFETY of RUBBER...AUTHORITY of STEEL

Traffic cones are rapidly replacing old fashioned hazardous wooden and metal barricades and expensive flags and wire markers. Dangerous accident conditions to motorists and personal injury problems with workers have been eliminated with this safe, yet effective control.

STORAGE and TRANSPORTATION is SIMPLE

A minimum of space is required for TRAFFICONE storage because of their stacking feature. *One truck and one man* can now erect barricades and traffic controls over large areas where it used to take two or more, and in 1/10th the time.

LONG LIFE and LOW COST MAINTENANCE means ECONOMY

For complete information on effective traffic control write for illustrated manual and colorful brochure

Interstate Rubber PRODUCTS CORPORATION

90th Avila • Los Angeles, California

AGENTS:

Good, exclusive territories are open for fast-selling "FERRO" signs. Every city needs these highly visible porcelain enamel signs.

"FERRO" signs are nationally known, tested, *proved.* Finest quality steel, deeply embossed, finished in brilliant, permanent porcelain enamel.

If you have allied lines and a following, write today for further information.

FERRO ENAMELING CO.

1100—57th Avenue Oakland 3, Calif.

Member of a Great Pump Family

TYPE-OD
Aurora Horizontally Split-Case, Double Suction, Single Stage Centrifugal Pump.

For general water supply for municipalities, industries, office buildings, institutions—also—for handling liquids, chemical solutions, oils etc., in a wide variety of industries. Write for Bulletin 105-M for further details.

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA Always PUMPS — AURORA PUMP COMPANY

66 Loucks St., AURORA, ILLINOIS

For snow and ice removal.

Low-Cost Rock Salt Spreader

The International Salt Co., Inc., Scranton 2, Pa., has just received a patent on a coarse rock salt spreader which can be made simply and economically in any state, county, or township highway maintenance garage from materials that are generally on hand there. Floyd Stevens, one of the company's field engineers, began working out plans for the spreader in 1946; since then hundreds of them have been made and used successfully by many communities in the snow-belt area.

Called the Sterling Rock Salt Shaker, the new device is designed to provide a controlled spread of coarse rock salt for snow and ice removal. It hooks over the tail gate of any truck, and one of its features is the fact that it may be instantly attached, removed, or changed from one truck to another without alterations or use of bolts.

The Shaker consists of a metal trough with a capacity of 250 pounds of coarse rock salt and adjustable holes in the bottom through which the rock salt pours out onto the highway, a regulating handle to control the rate of flow through the holes, and hangers to fit over the tail gate of the truck.

In operation, it is hung as far as possible to the left side of the gate, so that it overhangs the center line of the road and distributes coarse rock salt equally on both sides of the line. Because of that feature, the spreading truck needs to make only one trip down the highway to cover both sides of it during the average snow and ice storm.

When the Shaker is set to one-half the maximum capacity of the openings, it applies coarse rock salt at a rate of 300 to 400 pounds per miles of 20 foot-pavement at a truck speed of approximately 15 miles per hour. Density of application may be instantly regulated by changing the size of the openings with the regulating handle, or by increasing or decreasing the speed of the truck.

Exide Battery Display

One of the featured exhibits at the annual convention of the International Municipal Signal Association in San Francisco's Mark Hopkins Hotel, September 17 to 20, will be the Exide battery display of The Electric Storage Battery Co., 42 S. 15th St., Philadelphia 2, Pa. As a highlight of the program, the company will introduce its newly developed BTI-2G battery which was specially designed for fire alarm and police telegraph systems.

Another product to be presented is the improved Exide PLX battery for telephone, electric clock, and other alarm systems. Housed in a newly designed plastic case, it is the forerunner of a line of stationary type batteries to which the new container will be applied.

Thomas H. Dooling, manager of Exide's San Francisco branch office, will head company representatives at the conclave.

ROADMASTER
Street Sweeper
WIRE

High Scleroscope Rating
Uniform temper.

Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON
Steel & Wire Co., Inc.
Worcester 1, Massachusetts
New York Akron Chicago Detroit
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SPECIALISTS IN THE REVALUATION OF REAL ESTATE, PERSONAL PROPERTY AND PUBLIC UTILITIES FOR LOCAL TAX EQUALIZATION PURPOSES

Illustrated Brochure Upon Request

THE J.M. CLEMINSHAW CO. APPRAISERS FOUNDED 1923 UNION COMMERCE BLDG., CLEVELAND

Our Twenty-Ninth Year

"Public Appraisal Service is a Public Trust"

Insto-Gas

FLOOR TYPE MELTING

FURNACE

FOR WATER WORKS CONSTRUCTION

Now the famous Insto-Gas plumbers furnace is available in the handy floor-type style for greater convenience of operation in ditches, under buildings and hard to get at places.

The Insto-Gas floor-type furnace has all the Insto-Gas features — instant lighting, safety, portability and economy.

This furnace has a melting speed of 40 lbs. of lead in six minutes. It can be used for melting metal, asphalt, paraffin and compounds.

With a 50 ft. hose, the furnace can be moved right to the work without moving the cylinder. The flame control valve is located at the furnace.

INSTO-GAS TORCHES

Water Works maintenance departments also use Insto-Gas torches for melting out bell joints and soldering work.

Insto-Gas equipment is listed by both Underwriters Laboratories and Factory Mutuals Laboratories

Write for Complete Information or Use the Coupon

Please send information on Insto-Gas to:

NAME .....

ADDRESS .....

Insto-Gas Corporation - Detroit 7, Mich.

James G. Kay, sales representative of V. H. Blackinton Co., of Newton Falls, Mass., displays a complete line of fire and police department and civil defense badges at the meeting of the International Association of Fire Chiefs, at Grand Rapids, Mich.

Ez-On Traffic Sign Representatives

Appointment of sales representatives in the West and Midwest for the Grace Sign and Mfg. Co., St. Louis 18, Mo., makers of Ez-On standard traffic signs, has been announced by Pierre Grace, president.

C. L. Lycan, 1155 N. Edwards Ave., Decatur, Ill., and B. P. Bates, 514 Linden Ave., Oak Park, Ill., will handle the southern and northern portions of Illinois, respectively; J. H. Harper, 4146 Flora Place, St. Louis, will represent the company in Missouri, and C. J. Simon, Box 1102, Colorado Springs, Colo., will be sales agent in Colorado. All four are associated with C. H. Thompson, 1504 South Grand Boulevard, St. Louis.

Ohio representatice is T. B. Zumstein, P. O. Box 402, Cincinnati 1; Tennessee representative, the American Fire and Safety Equipment Co., 513 Sixth Ave., Nashville, and Michigan representative, R. G. Moeller & Co., of Kalamazoo and Detroit.

The Ez-On sign, designed for use by county highway commissioners and engineers, is so constructed that it will slip over a standard steel street marker, using the steel plate of the original sign as a backboard. The manufacturer reports that Ez-On markers, readily available, cost only a fraction of the price of standard traffic signs and may be installed in less than five minutes.

NEW "EZ-ON" TRAFFIC SIGN FACES

NOW READY FOR IMMEDIATE SHIPMENT!

Is steel shortage or lack of help preventing proper maintenance of your traffic signs? It will pay you to investigate EZ-ON sign faces*! O! 30 gauge steel, these EZ-ON faces conserve the supply of heavier steel. Traffic signs get top priority of our stock on hand. Order EZ-ON faces to renew your unsightly signs. Slipped right over the old signs . . . they look like new!

3 sizes, 3 shapes SHIPPED IMMEDIATELY! Standard copy in 18", 24" and 30" square, octagon or diamond shapes. Write for complete details.

* *Patent Pending*

REFLECTORIZED SIGNS

. . . at a new low price!

Reflectorized EZ-ON sign faces cost only a fraction as much as new signs, due to our highly specialized production.

EZ-ON FACES ATTACHED IN ONLY 5 MINUTES without taking old sign out of service!

Slip EZ-ON face between post and old sign.

Use special crimping tool to crimp flanges.

PROVEN DURABLE!

EZ-ON faces withstood equivalent of 3 years outdoor exposure in Weatherometer tests for color retention and bead adhesion. Also tested for reflective qualities and approved by state highway departments.

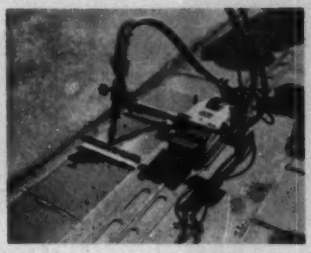
WRITE

For name of nearest distributor and price list

GRACE SIGN & MANUFACTURING CO. - ST. LOUIS 18, MO.

Many Municipal Uses for Flame-Priming

Metals are easier to paint when "flame-primed" in this manner.



Here's how the flame-cleaning head cleans air diffuser plates. About 1/16-inch of clogged surface material is spalled off on each pass.

Flame-cleaning is used extensively for preparing steel surfaces on all types of structural steelwork, storage tanks, dams, and piling for painting, according to the Linde Air Products Division, Union Carbide and Carbon Corp., New York 17, N. Y. This process—called "flame-priming" — is economical and easy to use, and the warm, dry, treated surfaces are ideal for the application of paint. As soon as the loose scale is popped off and the rust is dehydrated and loosened, the warm, dry surface is wire-brushed and swept to remove all loose material. Paint is applied while the temperature of the steel is still above that of the surrounding air. The warm steel gives a low-temperature bake to the paint, thus increasing the durability of the paint film. As a further advantage, painting can be done under cold and damp conditions which would otherwise cause major delays. The Linde Oxweld equipment is well suited to these duties, the company states.

The high-velocity, high-temperature flames required in flame-cleaning are produced by multi-flame in-line heating heads, ranging in widths from 1 to 12 inches. They are easily attached to standard welding blowpipes, either directly or by means of an extension.

The ready portability of the equipment makes the process ideal for use in the field as well as in the shop. In the field oxygen and acetylene is usually supplied from manifolded cylinders. Besides cleaning steelwork, another municipal field application having extensive potentialities is in the preparation of pavement surfaces for the application of the traffic stripe.

Surface clogging of diffuser plates used in activated sludge plants has always been a problem since usual cleaning methods are time-consuming and costly. Acid washing requires removing the plates. When sandblasting is used, additional time is needed to clean up the sand debris.

Recently, sewage engineers decided to try the flame-cleaning process when the plates became clogged with fine sand particles at New York City's Wards Island plant. Trial tests proved that the flame-cleaning head did an excellent job of spalling off the clogged surfaces. Equal layers of clogged surface material were spalled off until air passage through the plate was normal.

Three men did the job with an Oxweld oxyacetylene blowpipe with a 12-inch flame-cleaning head mounted on an Oxweld machine. The quick high heat of the oxyacetylene flames popped thin layers of clogged surface material loose. One man ran the machine, a second man handled the hose from the oxygen and acetylene cylinders, and the third man swept up the spalled-off material.

American Vacuum Leaf Loader

Solves your leaf or clean-up problem

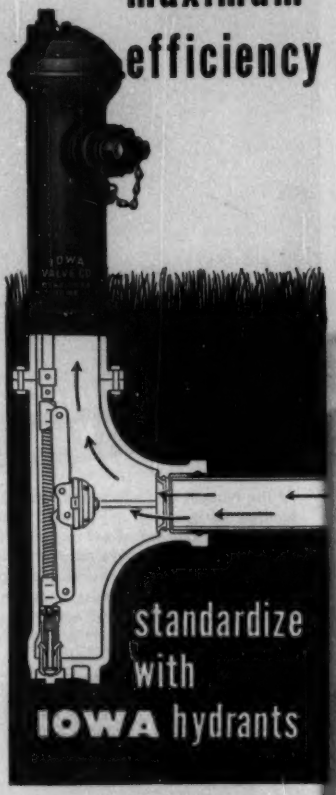
Write for leaflet

LEAF LOADER DIVISION

American Structural Steel and Tank Co.

21050 W. 8 MILE ROAD DETROIT 19, MICH.

for maximum efficiency



Two piece operating nut with special adjustment screw solves the problems of expansion and contraction . . . makes Iowa hydrants easy to operate at all times.

Positive operating mechanical drain valve can be removed along with all other working parts through top of hydrant without special tools.

Fixed position of valve arms makes leaking impossible should standpipe be broken.

Unrestricted water flow gives full pressure at extreme low loss of head.

Built to conform to the latest A.W.W.A. specifications.

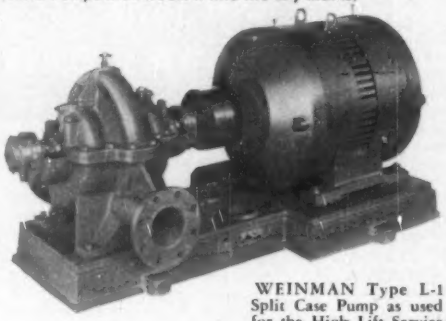
IOWA VALVE COMPANY

201-209 N. Talman Avenue • Chicago 80, Illinois

A subsidiary of James B. Clow & Sons

Columbus Pumping Station selects WEINMAN Pumps

At the Nelson Road Pumping Station in Columbus, Ohio, seven WEINMAN Centrifugal pumps give uninterrupted pumping service. Four 10" Type L-3 WEINMAN Low Head Pumps as shown above take filtered water from clear water chambers under the filter beds and deliver it to a 50' elevated storage tank. Three 6" Type L-1 WEINMAN High Head Pumps then boost it into the city mains.



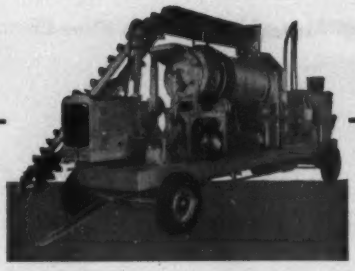
WEINMAN Type L-1 Split Case Pump as used for the High Lift Service in the Columbus Nelson Road Station.

If you have any kind of a liquid handling problem, talk it over with your WEINMAN representative. Because the WEINMAN organization is concerned with ONE product—Centrifugal Pumps—you will profit from this specialized experience. Just write, wire or phone WEINMAN—Career Men in Pumps. Representatives in Principal Cities.

Built by Centrifugal Specialists

The WEINMAN Pump Mfg. Co.

298 W. SPRUCE ST. • COLUMBUS 8, OHIO



Cities Can Save On Street Repairs With White Portable Plants

These 8-10 tons per hour Asphalt Plants economically repair almost any pavement. Asphalt, brick, concrete, macadam, can be resurfaced or patched. Alleys, sidewalks, driveways can be paved.

Produce for immediate hot laying, or for deferred cold patches. Match any bituminous surface.

Mixes at plant, including labor, fuel, and overhead cost about $4 per ton, with $2 aggregate. Average 160 to 200 sq. yds., 1" thick per hour. Compare this with your present costs!

Also larger plants, 15 and 30 tons per hour.

Write for catalog and name of nearest dealer.

White Mfg. Co.

Elkhart **Indiana**

M-SCOPE PIPE LOCATOR

Light-Weight MODEL-AB

Only $149.50

Metal Cased Cabinets
Superior Performance
at Lower Cost

Pipe Finder—Leak Detector
Combination Type BL $197.50

Free Illustrated Literature

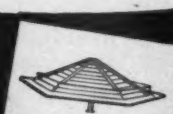
FISHER RESEARCH LAB., INC.

PALO ALTO CALIF.

PLAYGROUND EQUIPMENT

AMERICA'S FINEST

BUILT by BURKE



Designed expressly for safe healthy play. Approved by park and playground officials throughout the U. S. Strongly constructed with durable materials; easy, low cost maintenance.

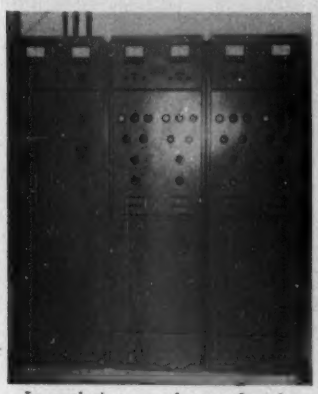
Burke engineers will gladly help you plan your playground.

Invest in child happiness with BURKE-BUILT EQUIPMENT—Climbing structures, swings, slides, see-saws, merry-go-rounds, turning bars, horizontal ladders, etc.

For complete catalog WRITE DEPT. K

THE J. E. BURKE CO., Fond du Lac, Wis.

Sanford, N. C., Reports Good Service from Pentefold Alarm



In replacing our former fire-alarm system, we decided to install a Pentefold fire-alarm system manufactured by the B & B Engineering Corp., Norwood, La. The manufacturer's free service plan was a determining factor in our selection, but results themselves have been gratifying. Furthermore, this system, requiring only one battery saved us the cost of a new fire-alarm building. We were able to install all the equipment in the new central fire station housing our new apparatus as well as the alarm.

Our old fire-alarm boxes work perfectly with the B & B system, and we have added 50 to 60 new boxes during the year of improved operation.

H. G. WRENN, *Supt. of Fire Alarm*
Sanford, N. C.

Larger Sizes Added To Earth Auger Line

A workman operates the Pengo twin-helix earth auger made for use with heavy-duty power earth-boring machines.

Three larger sizes of the Pengo twin-helix earth auger for use with heavy-duty power earth boring machines are now in production by the Petersen Engineering Co. of Santa Clara, Calif. The manufacturer states that the unusual design of the Pengo auger results in fast cutting with minimum power requirements, permitting the boring of holes up to three sizes larger than the maximum possible with old-style augers. An additional feature is their ability to bore a clean, true hole of the specified diameter, eliminating wanted concrete on poured-in-place piers and footings.

With diameters of 42, 48, and 54 inches, the three new augers are designed for use with all popular makes of heavy-duty earth-boring machines, as are the 11 sizes (ranging from 10 to 36 inches, previously announced.

File Folders Give Complete Story

Visible Tip follow-up folders tell at a glance what's in them. Request pamphlet LBV 567 from Management Controls Division, Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

The colored signals move easily along the top and are crimped to stay where set, showing the status of the contents and the action indicated. Pen-posting is eliminated since merely moving the signal indicates any change that may have occurred, and the incorporation of folders into present filing systems does away with the necessity of a separate file for follow-up. They are especially indicated for purchasing and for billing.

THE MODERN LAWN MOWER SHARPENER

CUTS MAINTENANCE COSTS

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LOWER CAPITAL INVESTMENT

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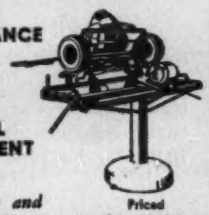

Economically and Quickly Sharpens All Municipal Mowers

Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 30 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36 inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor repair in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

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MODERN MFG. CO.
140 N. FAIR OAKS AVE. • PASADENA 1, CALIF.

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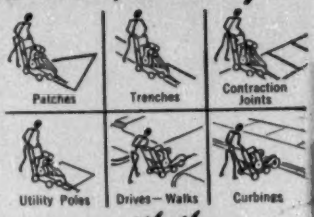

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CLIPPER CONCRETE SAWS

You save Time and Material when you cut straight, smooth edges with a Clipper Concrete Saw before breaking out for patches, trenches or machinery bases. Eliminate radial cracks—stop spalling! Imagine... Saw up to 12' per minute 1" deep in Limestone aggregate concrete!

Saw ¼ slab depth... then break out. Only a minimum of replacement material necessary!

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CONCRETE SAW DIVISION
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Send FREE Literature, Information and Prices on the NEW CLIPPER CONCRETE SAWS 5C

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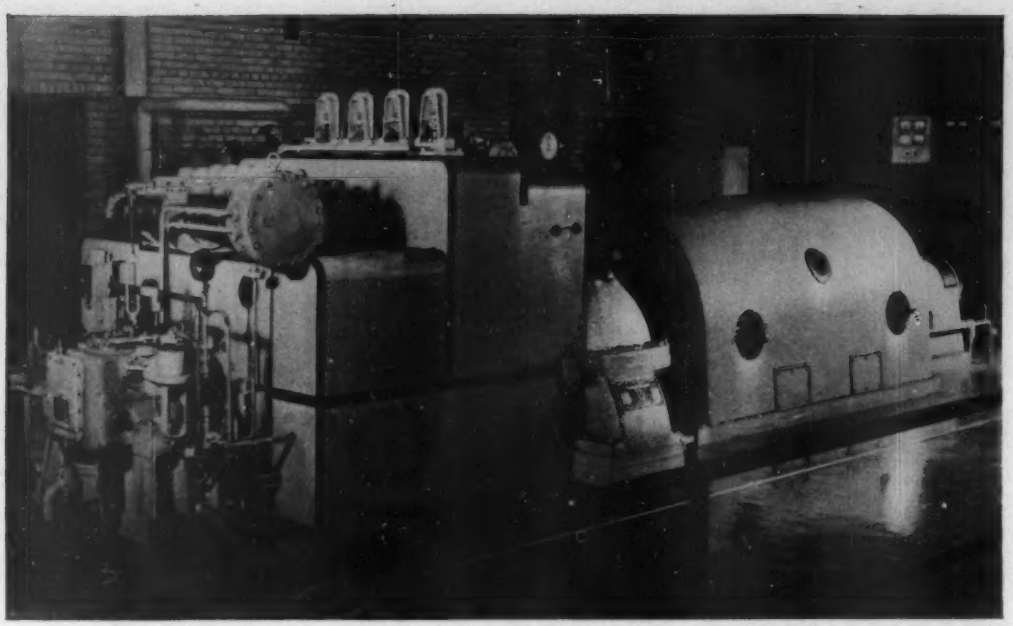


Story of an Economy Drive

How the Worthington Steam Turbine Pays Dividends for the City of Litchfield

What happened at Litchfield, Minnesota, is a clue to a most economical power plant operation.

Originally, the Litchfield municipal power plant consisted of low-pressure boilers, a steam engine and a small turbine-generator unit. The exhaust steam is sold for municipal heating.

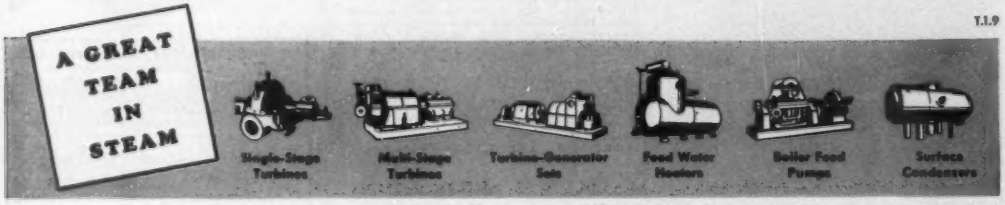
Next—a Diesel engine-driven generator was installed. The load grew, and finally, after a careful survey, it was decided to install a 3000-kw Worthington turbine generator and automatically extract steam for heating purposes.

Worthington builds steam turbines in all types and sizes—and turbine-generator sets up to 10,000-kw. For proof *there's more worth in Worthington*, call our nearest office or write to Worthington Pump and Machinery Corporation, Steam Turbine Division, Wellsville, New York.

WORTHINGTON

STEAM TURBINE GENERATORS

T.I.9



Caterpillar Vice-President

Leonard J. Fletcher has been elected a vice-president of the Caterpillar Tractor Co., Peoria 8, Ill., according to an announcement by L. B. Neumiller, president.

L. J. Fletcher
PORTRAIT BY BURKART PEORIA, ILL.

Formerly director of training and community relations, Mr. Fletcher will now assist in discharging the expanding duties in the president's office.

Mr. Neumiller, company president, also reported the following three promotions: Ralph J. Morgan, from assistant to the president to executive assistant; Clyde L. Schwyhart, from assistant director of training to the newly named education and training department, and Fred R. Jolly, from assistant director of community relations to manager of the community relations department.

R. M. Monk, vice-president, will assume administrative direction of education and training, while Mr. Fletcher will retain direction of the community relations department.

Protect Engineering Drawings

City engineers, public works and utilities officials will be interested to know that a new folder is now available treating exclusively on protective housing for drawings. What real fire protection means is indicated by the tests which Safe-Cabinets must withstand: 2 hours or 4 hours at temperatures of 1,850° and 2,000° F., respectively. They have 20 drawers 40½ by 26 inches by 2 inches high inside.

For small prints there is a 3-drawer Safe-File of interlocking tongue-and-groove construction that seals off each drawer. These are tested for an hour in heat reaching 1,700° F., then dropped 30 feet and reheated for half an hour. The booklet is *How Safe Are Your Drawings?* and may be obtained from Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

Fluorescent Lighting For Jersey Turnpike

New Jersey's 118-mile Turnpike will be lighted by 289 Westinghouse Electric fluorescent mercury lamps, according to Paul L. Trost, chairman of the New Jersey Turnpike Authority. Ninety-two standard mercury lamps will light the traffic interchanges where vehicles enter or leave the Turnpike.

Lamps, together with the required transformer and electrical controls, will be furnished under a contract awarded by the Authority to the Lightning Electric Service Co., of Newark, and the Emerson Garden Electric Co., Elizabeth, N. J. The latter will install the equipment. Lines of three New Jersey utility companies, the Public Service Electric and Gas Co., the Atlantic City Electric Co., and the Jersey Central Power and Light Co., will furnish the electric power for the lighting.

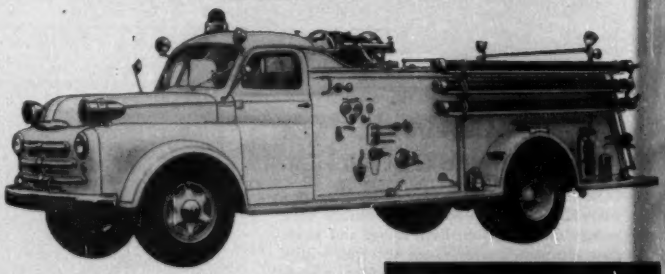
The fluorescent mercury lamps were developed recently by scientists in the Westinghouse lamp research laboratories at Bloomfield, N. J. Containing a special new phosphor, the lamps retain the high efficiency of mercury vapor but produce a golden white light.

The schedule calls for opening in November 1951, of 107.7 miles of the Turnpike south of the Raymond Boulevard interchange in Newark, and 4.5 miles north of the Lincoln Tunnel connection. A six-mile section between the Lincoln Tunnel and Raymond Boulevard in Newark should open January 1952.

American
FIRE ENGINES

... BARTON SUPER-FOG EQUIPPED

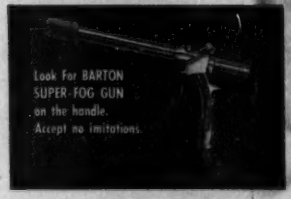
Give you extra fire fighting power —



Choose your favorite make of chassis—

We take responsibility for entire unit—

Choose from a variety of front or mid-ship mounted pumps—



On your AMERICAN engine, you get BARTON SUPER-FOG equipment – for the most effective fire-fighting fog known. Lays down a perfect fog blanket – at various ranges – with astonishing ease of control and freedom from hydraulic shock.

Choose your favorite make of truck chassis ... we'll complete your unit with careful pride in every detail of construction and workmanship. These things, plus many special features, assure you of *extra* fire-fighting power and *extra* dependability when you choose AMERICAN. Write for literature and name of nearest representative.

American FIRE APPARATUS CO.

P.O. BOX 1024 • MAIN ST. ROAD • BATTLE CREEK, MICHIGAN

Lightweight Perforated Pipe Stops Excessive Maintenance

Winter's ravage of roads and streets has disrupted many maintenance budgets. Costly surface installations need extensive repair, and in some cases complete replacement, as a result of the severe winter weather. And in most cases the damage has been done by excessive groundwater.

Armco Drainage & Metal Products, Inc., Middletown, Ohio, uses its lightweight perforated pipe in its subdrainage systems which are especially adapted for highway and railroad loading conditions. The pipe admits water freely without danger of clogging, and 20-foot pipe sections can be quickly and economically installed.

A new folder, *How to Stop Excessive Maintenance at the Source*, shows how Armco subdrainage systems get at the cause of the trouble. The company reports that its systems are recommended wherever excessive groundwater is found under highways, railroads, city streets, airports, recreation areas, or industrial sites.

Prevent Tank Rust With This Agent

Calgon, Inc., Hagan Bldg., Pittsburgh 30, Pa., produces Banox, the newest development to protect fire-fighting equipment. The company reports that Banox, well-knwon corrosion inhibitor in municipal and industrial fields, has now been improved especially to prevent rust and corrosion scale, and reduce costly maintenance of water tanks on fire-fighting equipment.

Especially adapted for highway and railroad loading conditions is this lightweight Armco perforated pipe.

It is harmless to the skin and clothing, to copper, brass, rubber, wood, paint, and fabrics and is non-combustible and non-toxic.

Effective in iron steel or galvanized tanks with any type of water, this agent prevents clogging of fog nozzles and pumps due to rust and corrosion scale; eliminates rust and corrosion scale in pumper and booster tanks and other water storage and hauling tanks used for fire protection, and reduces costly repairs and cleaning of tanks, helping to keep equipment ready for instant use.

Plastic Pipe for Pole Top Wiring

Plastic pipe as used for a 6.6-ampere street series lighting circuit installed by the municipal lighting system of Skaneateles, N. Y. High-voltage wires are safely brought down to the lamp through a section of 1¼-inch plastic pipe made by Carlon Products Corp., 10225 Meech Ave., Cleveland 5, Ohio. The pipe is easy to handle.

HERE
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Here's where savings start
Save on man-hour costs and expensive lumber
Complete each job faster and get better quality finished work
Use the same forms over and over for a wide variety of jobs

with BLAW-KNOX
STEEL CURB and GUTTER FORMS

FOR simple straight work or curved shapes, Blaw-Knox Curb and Gutter Forms save money on every job. Easy to set and strip, they complete the job faster and well within your estimate. Costly hand finishing is eliminated. You not only save on materials but finished jobs have a perfection impossible to achieve with wood forms. Maintenance is practically non-existent.

Start your set of Blaw-Knox Steel Forms *now* —expand at any time for future requirements.

WRITE FOR BULLETIN 2259 —28 pages illustrate form setups for every type of work, with complete instructions on how to use them.

CURB AND GUTTER FORMS. For combined concrete curb and gutter when curb is battered.

STRAIGHT CURB FORMS. For curb with both faces vertical. Auxiliary bracing system for lateral stability.

SIDEWALK FORMS. Furnished for any required width or thickness of sidewalk.

FLEXIBLE STEEL RADIUS FORMS. For curved work of variable radius. Back forms, gutter forms and battered curb face form can be set to any desired radius.

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BLAW-KNOX DIVISION of Blaw-Knox Company
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STREET MARKING *and* TRAFFIC CONTROL

Signs of Efficiency

ZINC COATED, BONDERIZED STEEL, BAKED-ON ENAMEL GIVES RUGGED SIGN EXTRA LONG, USEFUL LIFE.

Efficient governing bodies specify Miro-Flex for street marking and traffic control jobs because they know motorists appreciate good signs. They know too, that distinctive, readable traffic control signs go hand in hand with traffic safety. Miro-Flex signs are deeply and uniformly embossed on zinc-coated, bonderized steel, and are also available with glass or Lucite buttons. Citizens like the signs they can see . . . signs by Miro-Flex. Send today for our catalog.

MIRO-FLEX STREET NAME ASSEMBLIES GIVE CLEAR DIRECTIONS, YEAR IN AND YEAR OUT.

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MIRO-FLEX CO., INC.

1824 EAST SECOND STREET • WICHITA, KANSAS

N. J. Highway Dept. Uses the NETCO Catch Basin Cleaner...

And agrees with many other state highway departments that NETCO is the fast, cheap way of cleaning catch basins. Their Netco is shown here cleaning catch basins along a state highway in Woodbridge.

Easily mounted on any short wheel base truck with 8 ft. in back of the cab, the Netco can be operated continuously, averaging 20 to 30 basins a day. The Netco with pneumatic controls is simple to operate and easily removes all sticks, stones, bottles, wire and other such debris through openings as small as 16 inches.

NETCO—THE MODERN CHEAP WAY OF CLEANING CATCH BASINS

Fill in and mail this coupon TODAY for complete information on NETCO CATCH BASIN CLEANERS

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TITLE .....

ADDRESS .....

.....

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
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EVERY CITY HAS THEM

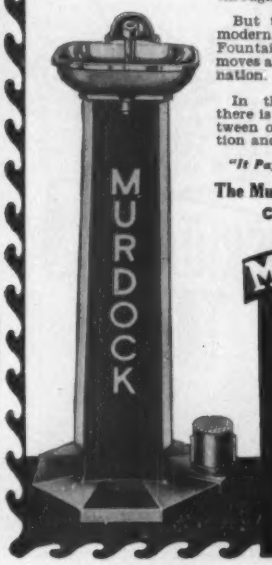
Every city has "spots" where the danger exists of the contamination of drinking water through back siphonage.

But the installation of this modern Outdoor Drinking Fountain at such "spots" removes all possibility of contamination.

In this Murdock Fountain there is no cross connection between outside sources of pollution and the supply line.

"It Pays to BUY MURDOCK."

The Murdock Mfg. & Sup. Co.
Cincinnati 2, Ohio



MURDOCK
OUTDOOR DRINKING FOUNTAINS
HYDRANTS
STREET WASHERS

Stewart PRODUCTS — FOR PUBLIC PROPERTY

FENCE
Chain Link Wire or Iron in many styles, weights and heights

SETTEES
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STEEL FOLDING GATES
ORNAMENTAL IRON LANTERNS
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Whatever you need, if it's made of iron, wire or bronze, it will pay you to contact Stewart. Literature sent on request. Please mention products in which you are especially interested.

Stewart IRON and WIRE FENCES

THE STEWART IRON WORKS CO., INC.
1821 Stewart Block
Cincinnati 1, Ohio
Experts in Metal Fabrications since 1886

The TROJAN pipe puller and pusher — Cuts Costs! Saves Time!

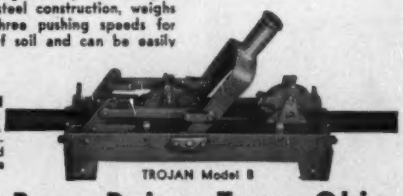
• Simplifies installation or renewing water and gas service lines under pavement

MODEL A—for ½" to 1" pipe. One man can lift in and out of trench and install average service. Weighs only 65 lbs. Special design and all-steel construction make possible 15 tons of pushing pressure.

MODEL B—will push up to 2" pipe without additional dogs, clamps or wedges. Heavy duty, all-steel construction, weighs 140 lbs. Has three pushing speeds for different types of soil and can be easily reversed.

TROJAN Model A

DOUBLE ACTION AND CONTINUOUS OPERATION
No re-setting of grip required. Push pipe is made of double extra heavy steel pipe with inside couplings for butt joint. Pilots and Special Couplings will handle variety of jobs.



TROJAN Model B

The TROJAN Manufacturing Co., 1112 Race Drive, Troy, Ohio
41 GREENWAY—HAMDEN, CONN. BOX 465—MEMPHIS, TENN.

UNITED SEALS — FOR ALL MUNICIPAL AND WATER WORKS USES

We can furnish you any type of lead or wire seals for every need, including water meters, electric meters, parking meters, boxes, drums, trunk cars, fire extinguishers, cash boxes, governors and carburetors.

All size leads. Wire may be had in copper, galvanized and steel, either cut to standard lengths or in spools or coils, single crimped 2, 3 & 4 ply in most gauges.

We also carry a complete line of seal presses. Will letter to order with no additional charge.

Cast iron stop cock seals for sealing in position any size or type pipe stop cocks including lock-wing stops.

Same type seals also manufactured for all type and size pipe unions.

THE UNITED SEAL COMPANY
450 S. PEARL ST. COLUMBUS 15, OHIO

Worthington Sales Managers

W. C. Mumford

V. de P. Gerbereux

Walter H. Feldmann, vice-president in charge of sales of the Worthington Pump and Machinery Corp., Harrison, N. J., has announced the appointment of W. Clifford Mumford as manager of the Vertical Turbine Pump Sales Division, and V. de P. Gerbereux as manager of the Centrifugal Pump Sales Division.

Fenmore E. Dunn, former consulting sales engineer, is assistant manager of the Vertical Turbine Pump Sales Division, and J. W. Hepburn will continue as assistant manager of the division at the Denver, Colo., works.

Mr. Mumford joined Worthington in 1938. In 1946 he was assistant to the late Frank Kemp and acting manager of the division since Mr. Kemp's death. With the company since 1950, Mr. Dunn had been chief engineer of the A. D. Cooke Co., Lawrenceburg, Ind. Both men will have their headquarters at the Harrison sales offices.

Mr. Gerbereux succeeds A. H. Borchardt who was elected vice-president in charge of centrifugal, reciprocating, and vertical turbine pump sales. With the concern since 1924, Mr. Gerbereux has served as a centrifugal pump designer, application engineer, and in 1937 as assistant manager of the Centrifugal Pump Sales Division.

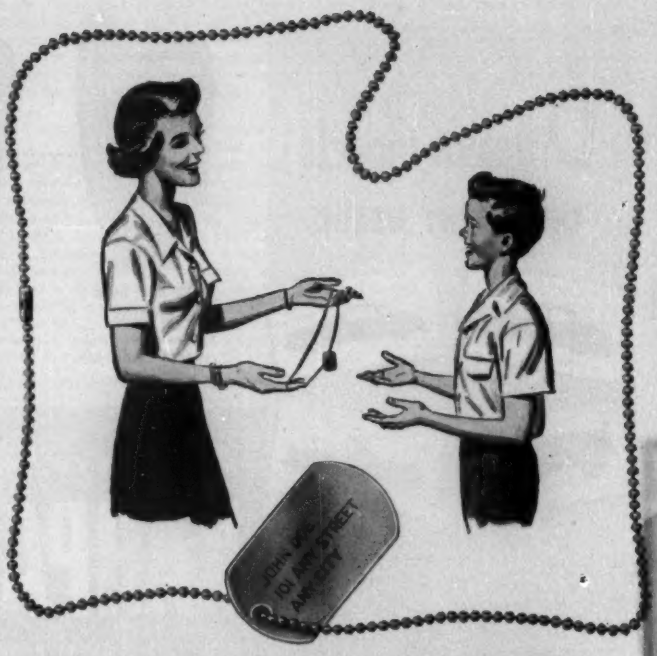
Inventor of a specific speed slide rule and an acid valve, he is well known as the author of the centrifugal pump section of Kents Handbook.

The Chief Can Fight Some Fires Alone

A fire-fighting chief's car has been devised on the Coast by which, it is felt, the fire chief can get to the fire first and have the incipient fires extinguished before the big apparatus arrives. The equipment is called a Hi-Super booster unit that slips into any truck. The unit comprises a 125-gallon tank 36 by 47 inches, a 4-6 gpm 500 psi Hurst pump, and Wisconsin 5-hp engine. It is for slip-installation on all ¾ and 1-ton pickup trucks.

Another model uses an 8-10 gpm 600-pound pump with 7½-hp engine. The fact that there is no load on pump or engine unless nozzle is operating reduces gasoline consumption and engine wear.

The unit can be obtained also in the shape of a Jeep or a trailer-mount. For details, write Hurst Industries, Inc., San Jose, Calif.



CITIES FROM COAST TO COAST

adopt identification necklaces of Bead Chain for students

From New York City to Redwood, California, many cities across the country are ordering Identification Necklaces as a safeguard for their school children. Each student is being issued a necklace carrying a tag on which is stamped the student's identity and other information necessary for civilian defense.

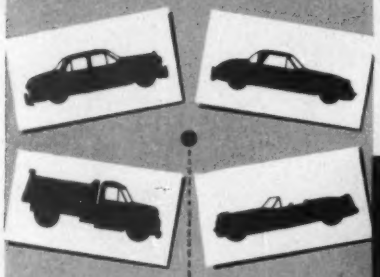
For this purpose, Bead Chain has long been accepted as standard by our Armed Forces, for whom we have made identification necklaces for many years.

So flexible that it can't kink . . . economical, attractive, comfortable and very strong . . . Bead Chain is also preferred for religious chains and many other products made for personal wear. Write for catalog and complete information.

The BEAD CHAIN® Mfg. Co.

24 Mountain Grove St., Bridgeport, Conn.

Different models
DIFFERENT NEEDS



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THE KARPARK CORPORATION
CINCINNATI 6, OHIO

THE WISE CHOICE

The Steel Head
SUPERIOR
Supreme in strength; in resistance to damage and vandalism.

The Low Cost
HUSKY
Makes Karpark dependability available at a minimum investment.

The Versatile
TWIN-O-MATIC
One installation times two cars; has every wanted feature.

The "First Family" of Parking Meters

KARPARK

A METER FOR EVERY PARKING NEED

The Adaptable UNIMATIC
Takes care of any parking situation—beautifully and efficiently.

Flame Resistant Canvas is Safer

The added protection offered by flame resistant canvas for awnings, tents, canopies and other similar equipment is recognized by leading fire prevention authorities. Flamefoil is approved by Underwriters' Laboratories, Inc., as well as by municipal and state governments. It is the "standard" tent fabric supplied to Army, Navy and Federal specifications for flame resistance.

PHILADELPHIA TEXTILE FINISHERS, INC., Norristown, Pa.

FLAMEFOIL CANVAS
for Safety

FLAME . . . WATER . . . WEATHER . . . AND MILDEW RESISTANT

"GUNITE" CONCRETE
(Since 1915)

SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) • CONCRETE AND MASONRY REPAIRS • STEEL ENCASEMENT • FIREPROOFING • STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING • SEWER LINING AND REPAIRING • CANAL, DITCH, AND DRAIN LINING.

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See our catalog in Sweet's

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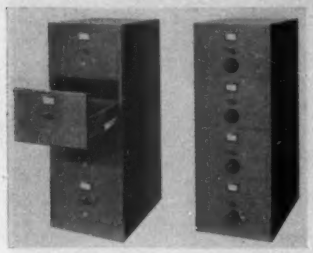
WATER and SEWAGE WORKS EQUIPMENT

— for metering and controlling flow of liquids, air, dry materials — also for chlorinating water and sewage. For Bulletins and complete information, address Builders-Providence, Inc. (Division of Builders Iron Foundry) 358 Harris Ave., Providence 1, R. I.

BUILDERS-PROVIDENCE

Specially Protected Files



New four-drawer legal and letter size one-hour fire endurance files are offered by the Herring-Hall-Marvin Safe Co., of Hamilton, Ohio. To prevent unauthorized access to vital information, the drawers may be equipped with either corrugated key locks or combination locks. A different lock can be used on each drawer.

People's Interest in Operation Of Diesel Engine Increases

Sidewalk engineers, housewives, and some corporation presidents may never need the rugged power of a diesel engine for their own personal use, but they can certainly think up a lot of questions to ask about them.

According to V. C. Genn, general sales manager of the General Motors Corp.'s Detroit Diesel Engine Division, 13400 West Outer Drive, Detroit 28, Mich., inquiries on diesel engine operation from people in all walks of life have increased by the hundreds in recent months.

People want to know how diesel enbines, unlike the gasoline engines in their automobiles, can operate without carburetor or sparkplugs and how they can successfully burn ordinary fuel oil instead of high octane gas.

A list of questions frequently asked has been compiled by GM diesel engineers. These questions and answer afford an opportunity to increase your knowledge of this comparatively new "work horse" which you see driving many types of equipment in the construction, marine, and industrial fields throughout the country.

In answer to what is a diesel engine, people learn that it is a piston-type engine that needs only the heat of high compression to fire its fuel. Fresh air enters the cylinder and by compression is raised to a temperature high enough (about 1,000° F.) to ignite the injected fuel.

One also learns that greater operating efficiency is the chief advantage of using a diesel engine. It converts more heat from burning fuel into usable power. Simple steam engines and boilers are from 6 to 8% efficient, gasoline engines 22 to 28% and diesels 32 to 38% efficient. Starting one is simply a matter of pressing a button. In extreme cold weather a device is sometimes used to warm air as it enters the engine.

The diesel is safer than other engines because it burns less volatile fuel and true diesels do not need an ignition system to operate. There is less danger of fire. There is no ignition to shut off. To stop it, you merely move the throttle to the "off" position and cut off the fuel supply.

Among other information gleaned from the list of questions and answers are: some diesels use 2-cycle design to get higher horsepower in a lighter, more compact engine; originally designed to burn whatever fuel which is plentiful in the area they operate in, they can be designed to operate on powdered coal or almost any fluid that has proper ignition properties and can be injected into the cylinder; diesel exhaust gases are not dangerous because they burn their fuel so completely that the exhaust has no monoxide gas.

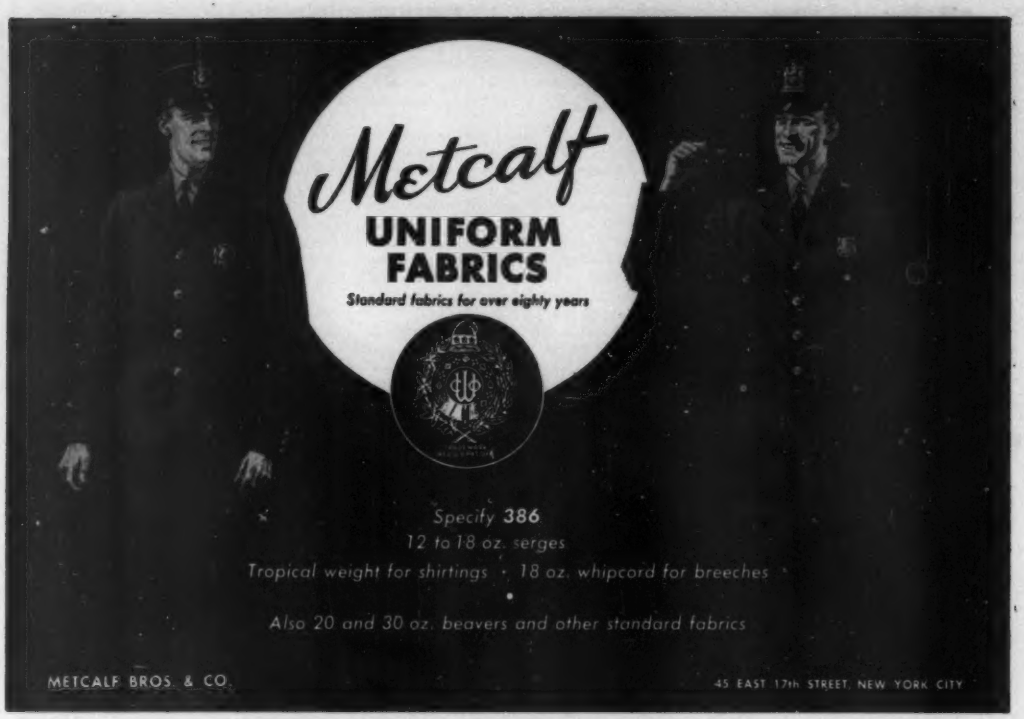
No Spark Plugs, No Carburetor, No Gas — and the engine does all that work! How do you like that?

These Men Saved $5,192.31 Today!

It is estimated that the cost of a ground survey on a large flood control project would have been over $3,000,000 and would have taken over 10 years. An Abrams Aerial Survey cut costs 90% — resulted in savings averaging over $5,000 a day. Time saved on the project was eight years.

Have Them Work for You... Whether your project is governmental or commercial, large or small, an Abrams Aerial Survey can save you time and money. Write for the new edition of our book, Aerial Surveys and Maps From Photographs.

ABRAMS AERIAL SURVEY
CORPORATION
LANSING 1 MICHIGAN U S A


Metcalf
UNIFORM
FABRICS
Standard fabrics for over eighty years
Specify 386
12 to 18 oz. serges
Tropical weight for shirtings · 18 oz. whipcord for breeches
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White Motor Company Makes Appointments for Sterling Division Operations

Robert F. Black, president of The White Motor Co., Cleveland 1, Ohio, announced that the company's board of directors has elected William G. Sternberg a vice-president, in charge of the Sterling Division, with headquarters at Milwaukee. Mr. Sternberg has been president of the Sterling Motor Truck Co., which has been acquired by White and which will be operated as a division.

W. G. Sternberg

J. P. Dragin E. R. Sternberg

Two other appointments to the Sterling Division are Ernest R. Sternberg, general manager, and J. P. Dragin, vice-president in charge of finance.

W. G. Sternberg joined Sterling in 1904 as shop foreman. He became vice-president and general manager in 1932, and president four years later.

E. R. Sternberg, son of the division's president, has been with the company for several years.

Associated with White since 1945, Mr. Dragin has been serving as assistant to the controller.

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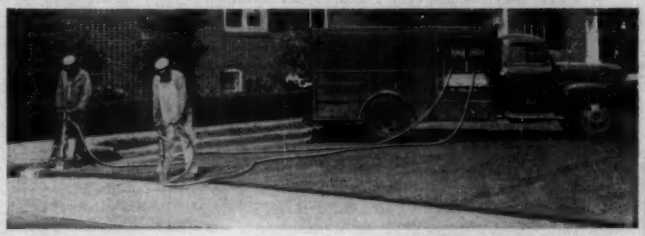

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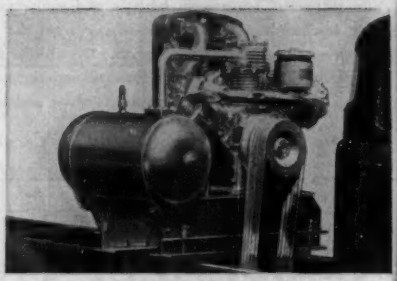

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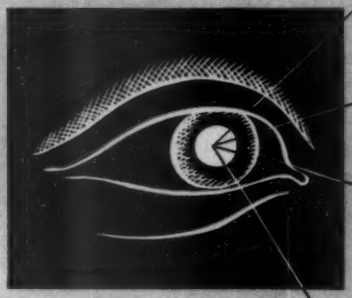

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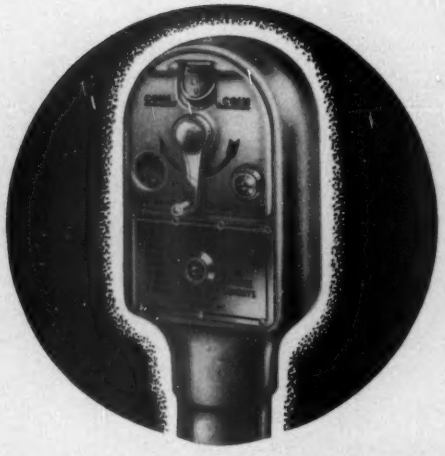

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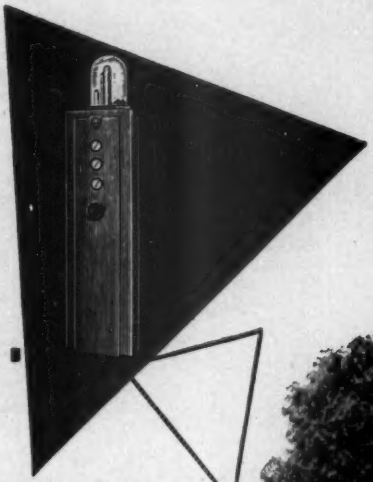

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